Lifetime ratio improvement in relay nodes using CWSN for cooperative wireless sensor networks

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***Abstract*—The frequent interchange of information between nodes is made possible by a lifetime extension of battery-operated devices, which is a crucial design consideration. A broad framework for the performance trade-off between packet error rate (PER) and network lifespan in Wireless sensor networks (WSN) and collaborative wireless network sensors (CWSN) is provided in this research. According to the simulation results, when there are more sensors added, the PER for WSNs lowers. Additionally, it has been shown that choosing the sensors with the longest lifespan is no longer the best course of action for reducing PER. As the number of sensors surpasses a specific threshold, it is demonstrated that the drop in the PER is not proportional to the growth in the network lifespan. The lifetime performance of CWSN also grows with the number of sensors, and its PER falls with the number of sensors.**

***Index Terms*—PER, CWSN, PER performance, Network lifetime, Wireless sensor network**

I. Introduction

Most WSN's are made up of inexpensive, low-power, and energy-conscious sensors that are in charge of sending information to the access points (APs) from which the end user may obtain the data the sensors have gathered. Many WSN applications make it difficult to change or recharge sensors, and if energy consumption is not balanced, certain sensors might run out of power and cease to operate while other parts of the network might still have enough power to transmit data. Additionally, replacing cells is difficult and expensive, thus the network should continue to function for many years without doing so. As a result, network lifetime has emerged as a crucial concern, and lifetime maximizing has taken on more significance in WSN applications where cell replacement is restricted. To increase the network lifespan of WSNs, channel estimation information (CEI) and minimum energy information (MEI) of physical layer factors can be used. In [1], a lifetime-maximizing protocol has been put out that increases network lifespan by taking use of both CEI and MEI. It significantly extends the network lifetime and maximizes the minimal residual energy throughout the network for each data collection. However, when the network lifespan increases, their performance with regard to packet error rate (PER) does not. In this research, we arrive at an intriguing conclusion: Increasing network lifespan does not automatically result in better PER performance. Utilizing cooperative diversity is another strategy to increase network lifetime [2]. To address aging in wireless relay channels driven by multipath propagation, the cooperative diversity idea has been established. In contrast to interference, cooperative diversity views the additional signal(s) as a contribution. It decodes the data from at least two contributing signals. It enables remote users to share information with one another throughout the network to investigate the inherent geographical diversity that is present in the relay channels, providing the cornerstone of cooperative diversity. Additionally, the relays can significantly reduce energy consumption in wireless transmission [3]. To demonstrate the key idea of cooperative diversity, we consider a modern collaborative wireless networks sensor (CWSN), which consists of numerous different devices, such as laptops, cell phones, smart watches, etc., all of which have a finite lifespan, despite the fact that that some of them may have a longer lifespan due to advantages in terms of location and energy. A portion of the power from these devices may be utilized and assigned to help transmit the data of other energy-depleting devices connected to the network by implementing a cooperation protocol [4]. Thus, the baseline device lifetime for the network and the lifespan of energy-consuming devices may both be significantly enhanced. Decode and forward relaying (DNFR) and amplify and forward relaying (ANFR) are two of the proposed collaboration protocols. Relay aids in each of these protocols by transmitting data from source to destination. In a contrast to DNFR, where the relay decodes, re-encodes, and retransmits the information to the destination, ANFR merely amplifies the signal broadcast from the source to the recipient while maintaining the needed quality-of-service (QoS) [5]. In CWSN, we place a special emphasis on ANFR in a scenario where one source transmits to the destination

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Design & Optimization of LDMOS Transistor Using Doped Silicon Pockets in Buried Oxide

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ABSTRACT

Laterally Diffused MOSFET (LDMOS) devices are attractive devices for the new age flexible electronics applications. LDMOS devices offer various advantages over the conventional MOSFETS without much change in the fabrication flow. The primary force behind LDMOS is its huge volume use, which makes it possible for the technology to be continuously improved. The LDMOS device offers a higher breakdown voltage as compared to the conventional MOSFET devices, a characteristic of interest for the flexible electronics and other applications.
The current research work is aimed at studying the LDMOS device characteristics by way of modelling the device in a process simulator software package and to optimize the device to improve breakdown voltage and reduce the on-resistance. The research work involves a thorough modelling and optimization of the LDMOS device as per the fabrication sequences and studying the various performance metrics.

Keywords: LDMOS; RESURF; breakdown voltage; on-resistance; silicon pockets.

1. INTRODUCTION

A new era of electronics started in 1947 when Bardeen, Brattain and Shockley invented the transistor. In 1958 Jack Kilby at Texas Instruments made the first IC. Since then the semiconductor industry has accelerated steadily. This can be illustrated by Moore's law which states that the number of devices per area doubles every 18 months and the cost per device will half every 18 months [1, 2].

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CHAPTER 1

Biomass: A Sustainable Foundation for Bioenergy and Bioremediation-it's Confronts and Scenarios in the COVID-19 era: A Review

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Abstract: Various nations have distinct visions/missions and energy implementation strategies. Energy sources are essential to a nation's economic development and a necessity for all inhabitants. Several nations face varying degrees of energy catastrophe as a result of insufficient natural resources today mixed with the COVID-19 outbreak. This emergency led to the shutdown of numerous industrialized divisions exacerbated unemployment, constrained energy access, and associated societal shocks. A fundamental reason for these conflicts is the widening chasm between energy delivery and orders, financial issues, logistics, and irrelevant strategic planning considerations. The use of bioresources as a novel source of waste biomass was identified as a crucial criterion for bridging the gap and creating a vast outlook for an environmentally friendly biorefinery and bioremediation process. This presents a potential obstacle, as it suggests a replacement for fossil fuels in the production of specialty compounds and energy carriers. As a carbon-neutral mode/s, this reduces market anxiety and negative environmental repercussions. This ecological bioremediation with the use of biomass (phytoremediation), less expensive sorbents (for bioaccumulation and biosorption), and microorganisms (mainly agricultural byproducts) was more favorable than conventional ones.

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Amruta Pattnaik, Alok Verma, Jayendra Kumar, Parthish Paul & Pratul Arvind (Ed.)

Development of Fire Detection surveillance using machine learning & IoT

Publisher: IEEE

Deepa K R ; Chaitra A S ; Jhansi K ; Anitha Kumari R D ; Ashwini kumari P ; Mallikarjun M Kodabagi **All Authors**

Abstract: The internet of things (IOT) was developed to provide internet-based remote access, monitoring, and control of home equipment. When the Internet of Things is applied to t... **View more**

Metadata

Abstract:
The internet of things (IOT) was developed to provide internet-based remote access, monitoring, and control of home equipment. When the Internet of Things is applied to the home, it transforms a simple home into a smart home that is safer and more automated. Now a day's in Worldwide the use of advanced technology using smart automation is exponentially increasing in residential sector. One of the biggest worries for designers, property owners, and builders is the possibility of a fire. There have been individual sensors utilized to detect fire for a long time, but they are unable to determine the degree of fire and make emergency response teams aware. To address this issue, the fire department, medical services, and local police stations are all notified of the fire simultaneously, protecting valuable properties and lives. Algorithms for machine learning are used to interpret signals from integrated detectors, such as heat, smoke, and flame to determine the fire's potential and distributing the anticipated result via GSM modem and IoT technologies to numerous parties. Structured for quick edge detection has also been employed to condense and forecast output. The developed end product also has reduced false alerts, which makes the system more reliable.

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Natural Disaster Detection System with Personalized Notification System

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Abstract:

In this context, Internet-of- Things (IoT)-based disaster detection and response systems have been proposed to cope with disasters and emergencies by improving the disaster detection. Here we design a general system with a number of sensors detect abnormal situations. Disasters such as landslide, flood & earthquake. This system uses three sensors, namely the vibration sensor, to detect the soil movement, the soil moisture sensor to detect soil moisture levels, and piezoelectric sensor. Sensor data is processed using Arduino Uno. The soil movement and soil moisture data are sent to the receiving node using the LoRa communication system so that residents around locations with the potential for disasters can access data from the sensor nodes for free. Based on the design and testing results, the LoRa system can work well at 250 meters in the channel with many buildings and trees.

Keywords:

Natural disaster detection, LORA. MQTT, Arduino IDE, sensors.

INTRODUCTION

Every year, natural and human-induced disasters result in infrastructural damages, monetary costs, distresses, injuries and deaths. Unfortunately, climate change is strengthening the destructive power of natural disasters. In this context, Internet-of Things (IoT)- based disaster detection and response systems have been proposed to cope with disasters and emergencies by improving the disaster detection. Accordingly, IoT devices are used to collect data and help to identify different types of natural and manmade disasters. Here we design a general system with a number of sensors detect abnormal situations. Disasters such as landslide, fire accidents and explosions and earthquake. Major difference between this system and existing systems is the decentralized and personalized alerting system. Here we get the location of disaster detected area and using this location identifies all the people in that area based on their phone location and sends them alert regarding the disaster before the situation gets dire.

This is can be used as an early warning system in the most unexpected situations. Natural disasters are unexpected events that concern world-wide nations. Every year, extreme weather conditions, hurricanes, earthquake, droughts, floods, and heatwave cause considerable damages, monetary costs, mass evacuations, distresses, injuries and deaths. For instance, the tsunami that in March 2011, destroyed more than 120,000 buildings, occasioned an estimated financial damage of about $199billion dollars, and caused 15,894 deaths. In Canada, the Fort McMurray wildfire forced over 88,000 people to leave their town, caused an estimated C$3.6 billion of insurance costs, destroyed about 10% of all structures in the town, and provoked chaos with people leaving their home with whatever they could take.

Natural disaster like earthquake, landslide, and flood detection is included in this system. This system is used to predict the occurrence of the disaster ensuring safety of the people. In recent technology advance communication media make a new technology in the disaster monitoring system. In this system different sensors are used and are embedded. Software like Arduino ide is used for programming and for notification part android phone is used for monitoring.

RELATED WORK

[1]. Arjun D. S (2016), presents an enhanced architecture for Cloud Sourcing using the Weather Disaster Monitoring using the Wireless sensor network. The weather forecasting department predict about weather atmosphere. Weather department to prediction about rain, tsunami, Earthquake, wind etc. Weather department prediction about the disaster is not correct. Its only safety for the human to display message through wireless sensors.

[2]. Ashish Rauniyar (2017), Nowadays, all countries and humans are prone to natural and artificial disasters. Early disaster detection about Earthquake, Fire, Storms, and Floods detect prediction for many people safety is easily safe. All the cloud sourced data are providing information of certain geographics region are analyzed in cloud platform. Cloud of source data make its way to analysis and more than thousand people life are lost. The fog computing is new and efficient way to cloud sourcing using IOT. In this paper public safety are most important concept of cloud sourcing-based disaster management to avoid the any disaster. Cloud- sourced data can be used to detect and alert about the disaster.

[3]. Rajesh Singh (2018), In this system it is all about working on machine automatically. IOT technology's important approach to speed up of the information about the power system and efficient management of power system infrastructure. Disaster prediction and reduction of power transmission line is important application of Internet of Things. Disaster management information transmission are easy on Embedded software. Transmission is very reliable. Internet Of Things

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Early Stage Brain Tumor Detection Using Image Segmentation & Machine Learning Techniques

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Abstract:
Detection of brain tumor depends on the s knowledge and experience of the physician.An automated tumor classification would support radiologists and physicians to identify brain tumors. In this paper, we propose machine learning techniques to detect brain tumor at an early stage. The accuracy of our system is 99.6%.

Index Terms:
Brain tumor, MRI scan, Image segmentation, machine learning, CNN algorithm.

INTRODUCTION

Brain tumor is an unnatural growth of cells in brain and can be classified into malignant and benign. Malignant tumors are the ones which cause cancer and non-malignant or the benign tumors are the ones which don't cause cancer. Tumor is a major cause of death in the world and usually is very less detected at the initial stages. It is important to detect tumor in the earlier stages so that it can be treated properly. Tumor is not easy to locate and can be a strenuous task. Common symptoms of tumor includes headaches, continuous vomiting, nauseated feelings and having problems while maintaining balance to walk and stand. In this paper we focus on extracting the tumor from the brain images using segmentation and then classifying the image using convolution neural networks. We in this project try to create a better solution for the doctors to better locate the tumor and make it easier for the doctor to analyze and work on it and save lives in a better way. Usually MRI scans and CT are used for scanning the images but it is preferred to use MRI because it is safer compared to CT scans as CT scans uses radiations whereas MRI uses magnetic resonance. Also CT scans cannot be performed a number of times but MRI scans can be used. Here in this paper we use MRI scans.

1.1 TYPES OF BRAIN TUMORS

Brain tumors are of two types:

1) Primary brain tumor
2) Secondary brain tumor.

Primary brain tumor arises from glial cells and is described as either high grade or low grade. Low grade tumor grows slowly, whereas growth of high grade tumor is faster. Depending on the location and size, tumors can be classified as gradeI, grade II and grade III. In most of the people with primary brain tumors, the cause of the tumor isn't clear. But doctors have identified some factors that may increase the risk of a brain tumor that include exposure to radiation and family history of brain tumors. The Symptoms, prognosis and treatment of a malignant tumor depend on the person's age, the exact type of tumor, and the location of the tumor within the brain. Detection at an early stage would increase the chances of patients survival. Previously many techniques were applied to detect the brain tumor at an early stage but were less accurate. In our work we are making use of automatic segmentation and CNN to make it more accurate[1-6].

PROPOSED METHOD

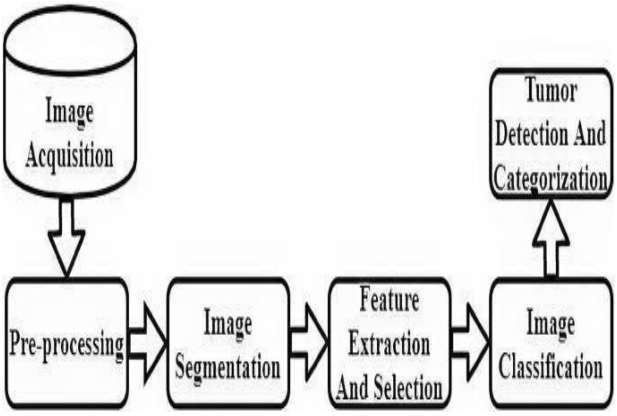

Fig1: Block diagram of the proposed method

Theblock diagram of the proposed method is as shown in Fig 1. Acquired image is converted to gray scale image which becomes easier for computing other parameters. The image is then preprocessed where the noise removal is done for providing clarity to the images. This is then filtered using Gaussian filter. The filtered image is adjusted with the required contrast and is segmented. Segmentation using morphological operations make the image for classification. This also provides good amount of security of the segmented brain image. It is later classified using convolutional neural networks with trained database. Classification of tumor using CNN provides the accuracy of the presence of tumor and also the probability of the image being tumor or normal.

RESULTS AND DISCUSSIONS

We have used the Matlab tool with 2017a version to perform segmentation and classification of the MRI brain images. The tumor is segmented using basic morphological operations

and classified using Convolution Neural Networks. The below is the fine classification result which tells whether there is a tumor present or not. The figures below shows

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Smart Reminder

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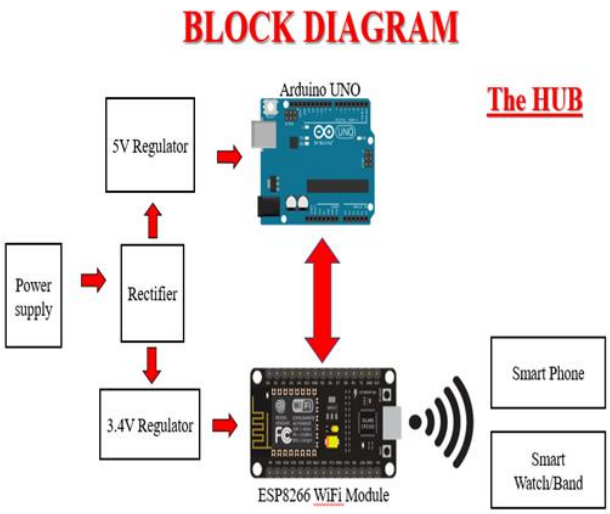
Abstract:
Forgetting things and other daily activities have become a problem for everyone, especially senior citizens. They usually forget about their health related things like medicines. To solve this problem upto an extent we can remind them about the medicines. What if we are out of station or we are in a situation where we can't call our elder once, to solve this we are going to develop a "SMART REMINDER SYSTEM" which includes a microcontroller and a wrist band/watch which can be connected to our smart phone using IoT technology.

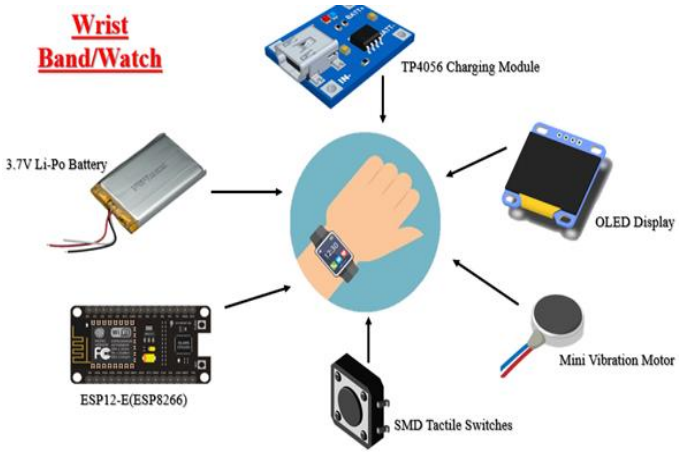
INTRODUCTION

Smart watch is basically a wearable mini computer/mini smart phone in the form of wrist watch with light weight and immediate access to messages, notifications, calls and other digital datas in our daily life.

Smart watch provides a touch screen interface, many potential capabilities like notifications, GPS Navigation, calendar synchronization and fitness tracking. However, so far these are the main applications updated in a smart watch, till now there is no technology implemented regarding health problems(Eg: medicine related) for elder once, to resolve this problem we are going to implement our idea to remind them about their medications.

In this project we are using a microcontroller(Arduino UNO), ESP 8266 WiFi Module, a wrist band/ watch which includes a mini LED display, vibration motor, battery and switches. We will be using IoT technology, WiFI technology to implement this reminder system.





WORKING PRINCIPLE

Arduino UNO which has integrated ATmega328P microcontroller, several I/O pins and several features which can be programmed with the help of Arduino IDE tools. In this project the Arduino UNO will be acting as a hub for the communication between our smart phone and the wrist band/watch. The microcontroller will be programmed to receive messages from our smart phone through the ESP8266 WiFi Module and the same WiFi Module will also connects with the wrist band when in range. We will be using a single mobile application which can take certain message input, time input and a reminder switch. The microcontroller also be programmed for giving reminder message signals to the wrist band at fixed time for the medicines by itself, this will be useful when our smart phone is out of range or switched off.

When a message signal is send from the smart phone, it reaches the microcontroller(hub) and then it is transferred to the wrist band. The wrist band is equipped with an ESP8266 WiFi Module, vibration motor, LED display, switches and a battery. When the message signal is received from the microcontroller the wrist band display will show the message content(the name/color of the pills to be taken) and the vibration motor will start to vibrates in a strong intensity which in turns reminds the elder person to take that pill at that time. The vibration motor can be stopped by pressing a switch provided in the wrist band.

By the pressing of that switch in the wrist band generates an opposite message signal and send to the microcontroller which we can consider as that our elder one had taken the medicine and this data can be accessed from our smart phone.

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System C Modeling of Write Combining Burst Generator for Bus Protocols to Boost System Performance

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Abstract

Many processor cores and bus masters in MCUs primarily designed for control, do not have burst support. Even though the external memories such as SDRAM and the memory controllers support burst accesses, the system throughput benefit is not completely realized because of the limitation imposed by the masters. Enhancing the cores/masters for burst support is more often than not, the least preferred solution, due to the time and complexity involved in the same.

The solution is to introduce the burst generator module in between non burst master and burst supporting slave to improve the performance gap. This comprises of 2 sub-modules: Write combining FIFO and READ CACHE. In this work, focus is on the write combining FIFO that combines single write accesses from the master and issues write burst accesses to the slave. This module is modelled using SystemC. Simulations with different write accesses and different FIFO depths are run to analyze the performance boost.

Keywords:

SDRAM, Burst generators, Write combining FIFO, Read cache, System C.

Machine Learning Analysis of Emotion Detects in Children

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Abstract:
One of the manners in which people convey is by utilizing looks. Research on innovation advancement in artificial knowledge involves profound learning strategies in human and PC collaborations as a compelling framework application process. One model assumes somebody does show and attempts to perceive looks while conveying. The forecast of the articulation or feeling of certain individuals who see it now and again doesn't have the foggiest idea. In brain science, the recognition of feelings or looks requires examination and evaluation of choices in foreseeing an individual's feelings or gathering in communicating. This examination proposes the plan of a framework that can foresee and perceive the order of facial feelings in view of element extraction utilizing the Convolution Neural Network (CNN) calculation continuously with the OpenCV library, specifically: Tensor Flow and Keras. The exploration configuration executed in the Raspberry Pi comprises three primary cycles, in particular: face location, facial component extraction, and facial feeling classification. The expected consequences of looks in research with the Convolution Neural Network (CNN) technique utilizing Facial Emotion Recognition (FER-2013) were 65.97% (65 points 97 percent)

Keywords:
Facial Emotion Prediction, Convolutional Neural Network (CNN), FER-2013 Dataset, Machine learning, Image processing, face detection, OpenCV, Tensor Flow.

INTRODUCTION

Acknowledgment of looks is utilized to recognize the fundamental human feelings. Looks give significant guidelines about feelings. PC frameworks in view of emotional cooperation could assume a significant part in the up-and-coming age of PC vision frameworks. Face feeling can be utilized in areas of safety, diversion, and human-machine interface (HMI). A human can communicate his/her feeling through lips and eyes. Facial feelings assume a significant part in correspondence among people and assist us with understanding the goals of others and how they feel. People have areas of strength in communicating feelings. They assume a fundamental part in our regular routines. Humans invest a lot of energy in understanding the feelings of others, unraveling what these signs mean, and afterward decide how to answer and manage them. Facial Emotion

Recognition is getting into our way of life and influencing us more quickly than they anticipated a couple of years back.

Facial Emotion Recognition has a great many applications. It tends to be applied in brilliant vehicles where it can recognize the feelings of the driver and cautions him assuming that he feels sluggish or sleepy. Facial Emotion Recognition (FER) can be useful in distinguishing whether the experience of the gamer was pleasant by breaking down his looks. It tends to be utilized in feeling location of advanced age individuals in advanced age homes and to screen the degree of stress and nervousness in everyday life. It can assist individuals with perceiving the declarations of individuals experiencing chemical imbalance or discourse hindered individuals. Also, examination offices can apply Facial Emotion Recognition (FER) to pre-decide their activities before they do the cross-examinations.

RELATED WORK

[1]. E. Cambria, B. Schuller, Y. Xia, and B. White, “New avenues in knowledge bases for natural language processing” Between the introduction of the Internet and 2003, year of birth of interpersonal organizations like My space, Delicious, LinkedIn, and Facebook, there were only a couple dozen Exabyte's of data on the Web. Today, that equivalent measure of data is made week after week. The coming of the Social Web has given individuals new satisfied sharing administrations that permit them to make and share their own items, thoughts, and sentiments, in a period and cost-productive way, with practically a great many others associated with the World Wide Web. This gigantic measure of data, be that as it may, is primarily unstructured (on the grounds that it is explicitly delivered for human utilization) and thus not straightforwardly machine-process capable. The programmed investigation of text includes a profound comprehension of regular language by machines, a reality from which we are still exceptionally distant. Until now, online data recovery, accumulation, and handling have principally been founded on calculations depending on the text based portrayal of website pages. Such calculations are truly adept at recovering texts, dividing them into parts, actually taking a look at the spelling and counting the quantity of words. With regards to deciphering sentences and removing significant data, nonetheless, their capacities are known to be extremely restricted, as a large portion of the current methodologies are as yet in light of the syntactic portrayal of message, a technique that depends chiefly on word co-event frequencies. Such calculations are restricted by the way that they can deal with just the data that they can 'see'. As human text processors, we don't have such impediments as each word we see enacts a fountain of semantically related ideas, significant episodes, and tactile encounters, all of which empower the consummation of complicated normal language handling (NLP) undertakings -, for example, word-sense

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Women Safety Device Night-Patrolling Robot

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Abstract:
This paper depicts Security of women is a major topic concern of India. Although despite having so many laws for women, it doesn't stop thieves, assaulters, or molesters to abuse women. The main reason that a women is being victim is lack of public security and inability of a women to defend her. To be able to protect herself, she must train herself through various self-defence courses. To overcome the drawbacks of women security applications and self defence equipment's, an women safety device night patrolling robot is developed.

Keywords:
Security of women, Self-defence, India

INTRODUCTION

Not only this, we must create such an environment in our society that women must feel secured outside their house even when they are alone at any time. Women are not so physically fit as compared to men so in case of a need a helping hand would be a boon for them. Vision robot Patrolling System The best way to reduce probability of becoming a victim of violent crime (robbery, sexual assault, rape, domestic violence) is to recognize, defence and look up resources to help you out of hazardous situations. If a women is in dilemma or get split from friends during a night out or someone is following with bad intention (sexual assault) or don't know how to find back residence then this device with her will guard her and bring assistance when she needs it by giving her current location and health conditions to her associates and control center through SMS and call.

This device not only provides family and police support but also helps in getting medical support as fast as possible. In today's world, women safety has become a major issue in our country as women can't step out of their house at any time, especially during night. It is primarily due to fear of violence against them or being physically or sexually abused. The fear of harassment against women is not only the condition at outside but it may also happen at homes. The best way to reduce probability of becoming a victim of violent crime (robbery, sexual assault, rape, domestic violence) is to recognize, defense and look up resources to help you out of hazardous situations. If a women is in dilemma or get split from friends during a night out or someone is following with bad intention (sexual assault) or don't know how to find back residence then this device with her will guard her and bring assistance when she needs it by giving her current location and health conditions to her associates and control center through SMS and call. This device not only provides family and police support but also helps in getting medical support as fast as possible.

LITERATURE SURVEY

[1]. "R. Devakunchari, s. Bhowmick, s. Bhutada, s. P. Bhutada, y. Shishodia, "evaluation of crimes against girls in India using regression,"ladies strengthening bases on empoone canring each lady within the United States of America to make them self ruling with all views in most cases available, to care only about|some|roughly|more or less|around|or so the rights, and to induce preparedness. This paper focuses on presenting the challenges that women face in their daily lives, as one can plans for ladies empoone canrment in India and a self-help community that is successfully walking within the province of Tamil Nadu, proposals for self-help institutions for potential upgrades, and a contextual investigation of ladies empoone canrment mobile. Navya R Sogi created "smarisa: a Raspberry Pi-based smart ring for womens security across the internet of things." They are created a smart ring (smarisa) for women that includes a raspberry pi, a camera, a sign, and a seize to start the services. As a result, the package is small and can be activated by tapping the catch to bring her gift. Using a Raspberry Pi camera, locate the aggressor and send the picture to the disaster touch broad variety. Prof. Sunil created the smart gadget for girls and child safety & quot; A small device that allows for a one canight switch.

[2]. Thiru venkatasamy s, "night time creative and patrolling rover navigation device for ladies safety the use of computer studying," girls security is India's greatest challenge. Many parts of the country are unsafe for women. This must be rectified as soon as possible.Every generation evolves and improves in order to change the way people live. As a result,the emphasis of this paper is on updating the era system in order to strengthen women's safety mechanisms. one can implement a new protection system in this paper to protect girls when they participate in strange sports. A new safety system has been suggested, which is entirely based on the patrolling robot and the Raspberry Pi. A night vision digital camera can be used to secure any location in this situation.Various gadget learning models are used to boost the classifies accuracy. In ensemble, algorithms such as boosting, bagging, piling, and the more desirable re one canight mechanism are used. The accuracy of a confusion matrix with a man or woman classifier is When comparing results,this is taken into account. The results show that the proposed method

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Internet of Things Enabled Power Theft Detection and Smart Meter Monitoring System

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Abstract:

Power theft, at low voltage distribution give up has been concerning about the problems together with distribution agencies will need to face losses of billions of Rupees sales annually. With the help of smart grid technology, clever meters with Information Communication Technology (ICT) could be capable of offer an answer for detecting and alerting the power theft. This paper presents the application of Internet of Things (IoT) in strength robbery detection and actual-time clever meter tracking. Linear Regression method is getting used for detecting electricity robbery by using constantly monitoring the customer and distribution cease smart meters facts. Android programs are advanced for tracking intake and additionally billing data of consumers and alerting the government in the occasion of robbery. The offered gadget is able to detecting strength theft because of meter skip, meter tampering and direct line hooking and etc. . As an extra characteristic, direct manage of smart meters from distribution authorities is implemented for imparting get entry to/denial of power deliver for an person patron. A prototype circuit is advanced the usage of ATmega328 micro-controller with Arduino and a Wi-Fi module, for validating the presented machine.

Keywords:

Power Theft, Smart Meters and IoT.

INTRODUCTION

Power loss is one of the important issues that have to be taken care in the distribution network. It can be addressed as the difference in power, between the generation and metered consumption. This power loss is classified into technical losses and non-technical losses. Majority of the power loss are nontechnical losses and are due to power theft. Power theft can be defined as the illegal or un- metered utilization of electricity from distribution utilities. The distribution utilities incur huge financial losses due to this power theft. It has been estimated that around 6-10 billion INR of revenue will be lost in India because of the theft every year. Consumers commit power theft in various ways which include meter bypassing, direct line hooking, meter tampering etc. A very common way of bypassing the meter include, connecting the supply wire directly to the distribution network in parallel to the meter. The other way to access electricity is by tampering the meter. This type of theft is generally practiced in the village and suburban areas where, insertion of foreign objects, magnetic interfering materials into meters or shortening meter terminals are done so that meter is not operated. Apart from these, consumers also commit direct line hooking on low voltage overhead lines to access the electricity. Hence power theft is a critical issue for the distribution utilities as it directly reflects on the revenue of the utility. Substantial research has been carried out on power theft detection algorithms. The Presents the power theft detection methods using consumer load profile analysis. But these methods have a limitation that they cannot identify complete bypass and line hooking type of thefts. The presented a method to identify power theft using temperature based predictive models which uses meter data and distribution transformer information. In work applied state estimation for power theft detection where, a privacy preserving theft detection algorithm has been developed by applying Kalman filtering approach. The presents the linear regression method for theft detection. However, it mainly concentrates on mathematical design of theft detection algorithm and less on real- time implementation. Apart from these, presented a power line communication-based approach for theft detection. In this paper designed an inspection device to detect power theft based on the magnetic oscillations of the distribution line. Various approaches have been presented in the literature for theft detection. However, these methods are more complex, computationally difficult and the utility has to invest in building dedicated infrastructure at consumer premises which is not feasible. Moreover, majority of methods concentrate only on detecting the theft and there is less research explored in building communication technologies to alert the authorities about the theft.

LITERATURE SURVEY

[1] In the year of 2011, the authors "Landi, C.; Dipt. di Ing. dell"Inf., Seconda Univ. di Napoli, Aversa, Italy ; Merola, P. ; Ianniello, G" presented a paper titled "ARM-based energy management system using smart meter and Web server", in this paper they described such as a low cost real-time ARM- based energy management system is proposed. It is conceived as part of a distributed system that measures the main power system quantities and give the possibility to manage the whole power plant. An integrated Web Server allow to collect the statistics of power consumptions, power quality and is able to interface devices for load displacement. The device is characterized by easy access to the information and the combination of a smart meter and data communication capability allow local and remote access. In this way it is possible to manage the power consumption of the power system leading to an overall reduction in consumption and costs.

[2] In the year of 2012, the authors "Garrab, A.; Bouallegue, A.; Ben Abdallah" presented a paper titled

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Auto Billing Shopping Cart Using Arduino

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Abstract

Nowadays purchasing and shopping at big malls is becoming a daily activity in Smart cities. This technique is select to decrease the Queue at a billing counter in a shopping mall. This system performs the displaying the total price of the product kept inside the cart. In this way the customer can directly pay the amount at the billing counter and leave with the commodities they bought. It removes the traditional scanning of item at the counter and in turn speeds up the entire procedure of shopping, also with this system the customer shall know the total amount to be paid and hence can accordingly plan his shopping only buying the essential items resulting in enhanced set aside. Since the entire procedure of billing is automated it reduces the possibility of human error essential. Also, the system has a characteristic to remove the scanned products to advance optimize the shopping experience of the customer. The hardware for the test run is based on the Arduino platform and We use inventory method for Mobile Applications, are very popular in small-scale research. Tracking of the product can be done in Mobile Applications.

Keywords:

Arduino, Mobile Applications, RFID, Shopping cart.

Design and Implementation of Wireless Black Box for Vehicle Tracking and Accident Alert System Using Arduino and GPS Module

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Abstract:

Since Road accidents are frequently occurring events, providing help for the injured person has to be the highest priority. When the vehicles reach the speed limit the message alert is sent by the GSM module. 24 hour & GPS tracking modules is enabled where the live locations with latitude and longitude marking are being updated through the Blynk app. Sending message alerts to the updated contacts for e.g. family members, ambulance and nearby police station in case of emergency. The threshold algorithm and speed system of motorcycles or cars are used to determine or accident in real time. The accelerometer detects the sudden change in the axis of the vehicle and the GSM module sends the alert messages on to the Mobile phone with location of the accident.

Keywords:

Road accidents, Blynk app..

INTRODUCTION

The motorcycle was involved in the majority of the accidents. This problem is still growing today as a result of poor riders' actions such as speeding, intoxicated driving, riding without a helmet, riding without enough sleep, and so on. The number of people who have died as a result of delayed help to those who have been involved in an accident. As a result, the research organization and major motorcycle manufacturers, such as Honda, have developed safety measures to safeguard riders from injuries caused by accidents. A good motorcycle safety equipment is difficult to implement and expensive to purchase. Only a tracking system can notice an accident. For unintentional monitoring, a black box with a MEMS accelerometer sensor and a GPS location tracking system is built in this research. GSM will send the approved mobile phone if the accident occurs at the same moment. The vehicle's location sends a short message to a family member via a GPS gadget. An accelerometer sensor, Arduino Uno microcontroller, GPS gadget, and GSM module for transmitting a short message make up the system. An accelerometer sensor is used to detect an accident in the X, Y, and Z directions. The motorcycle's speed and a threshold algorithm are utilized to determine whether a fall or accident occurs in real time. When a motorbike accident is detected, a mobile short message with the location from GPS (latitude, longitude) will be delivered. The sturdy box design is used to keep the product safe from water spray and dust in the environment. Under the motorcycle seat, this system is installed. The real-time readings from an accelerometer sensor are processed and stored using a high-performance microcontroller. As a result, this gadget is comparable to a black box on an Aeroplan. The police and insurance examiners can collect accident history from the data-logger in this device utilizing a black box to investigate accident conditions. For one minute before and after an accident, the gadget records track and acceleration data. Furthermore, this gadget can be used to track a stolen motorcycle, but it will not be able to do it in real time. In this instance, the user can send an alphabet request instruction to the device, which will return the position along with some basic information.

RELATED WORK

[1] Manuel Fogue, Piedad Garrido, Francisco J Martinez, Juan-Carlos Cano, Carlos T Calafate, "Automatic Accident Detection: Assistance Through Communication Technologies & Vehicle"The symbiotic relationship between communication technology and automobiles provides a precious potential to improve aid to persons injured in traffic accidents by providing information about the incident and shortening emergency response times. More precisely determining the required human and material resources for each accident could result in a large reduction in the number of victims. This article describes a revolutionary system prototype that is specifically designed to identify traffic accidents and deliver speedier assistance, hence reducing the health risks to passengers. The proposed system calls for each vehicle to be equipped with an Onboard Unit (OBU) that detects and reports accidents to an external control unit (CU) that assesses the severity of the situation and allocates the required resources for the rescue mission.

[2]. Hoang Dat Pham, Micheal Drieberg, Chi Cuong Nguyen, "Development of vehicle tracking system using GPS and GSM modem" Car tracking is beneficial for a variety of purposes, including personal vehicle security, public transportation systems, fleet management, and more. Furthermore, the global number of automobiles on the road is predicted to significantly expand. As a result, the development of a car tracking system based on the Global Positioning System (GPS) and the Global System for Mobile Communications (GSM) modem is underway with the goal of allowing customers to easily and conveniently locate their vehicles. Users will be able to track vehicles remotely via the mobile network with the help of the technology. The hardware prototype for a vehicle tracking system is shown in this paper. The

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Arduino Based Driver Drowsiness Detection and Alerting System

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Abstract:
Nowadays, more and more professions require long-term concentration. Drivers must keep a close eye on the road, so they can react to sudden events immediately. Driver fatigue often becomes a direct cause of many traffic accidents. Therefore there is a need to develop the systems that will detect and notify a driver of him/her bad psychophysical condition, which could significantly reduce the number of fatigue-related car accidents.
Drowsy driving is a major cause of traffic accidents. Eye blinking is considered as important evidence of driver drowsiness. In this report, a portable and low cost device for monitoring a driver's drowsiness is proposed. The proposed system consist of two main parts that detect eye blinking based on IR sensors mounted on eyewear. Depending on the reflected and absorbed IR radiation, this system detects and classifies the eye blinking into normal blinking.

Keywords:
Arduino Nano, Eye blink sensor

INTRODUCTION

Drowsy driving is a major problem. No one knows the exact moment when sleeps comes over their body. This makes the driver less able to pay attention while driving. Each year, drowsy driving accounts for about 100,000 crashes, 71,000 injuries, and 1,550 fatalities according to the National Highway Safety Administration. It contributes to an estimated 9.5% of all crashes, and 10.8% of those that involved airbag deployment (AAA).

About 27% of drivers report driving while being so tired drivers have difficulty keeping their eyes open (AAA). Most drowsy driving crashes occur between midnight and 6 pm or later on in the afternoon when the body regulates sleep (NHTSA).

Accidents due to driver drowsiness can be prevented using eye blink sensors. The driver is supposed to wear the eye blink sensor frame, the eye blink sensor works by illuminating the eye and eyelid area with infrared light. The sensor is connected with Arduino nano.

MATERIALS REQUIREMENTS

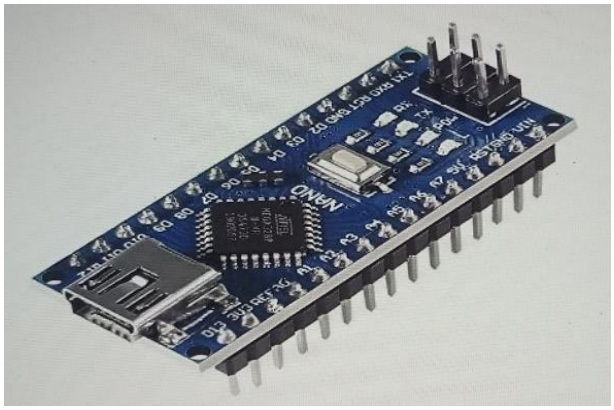
Hardware

- Arduino Nano
- Eye blink sensor
- 9v battery
- SPST switch
- Spectacles
- Vibrator motor
- RF Transceiver module

Software

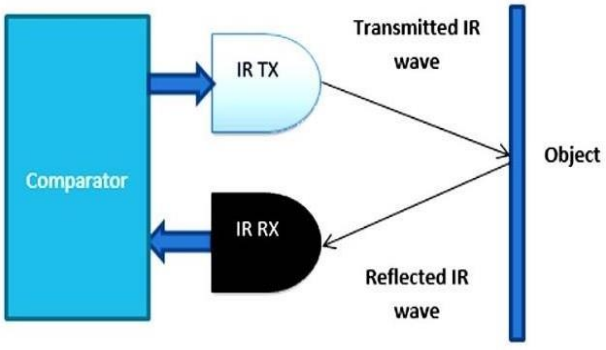
- Arduino IDE
- Language- C and C++

Arduino Nano



This arduino compatible nano V3.0 micro- controller is a small, complete, micro- controller board based on the ATmega328 MCU.

Eye blink sensor



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Home Security and Automation System

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Abstract

Home Security automation systems have gained popularity in recent years; it provides security, safety and comfort in our life at home. That is why in the competitive environment and fast world, home automation technology is required for every person. This purposed home automation technology provides smart monitoring and control of home appliances as well as door permission system for interaction between the visitors and home/office owner. The control and monitoring the status (ON/OFF of the appliances) have been implemented using multiple ways such as The Local Area Network (LAN) Using Wi-Fi or Ethernet, Over Internet, Electrical Switch and Graphical User Interface. The system has low-cost design, user-friendly interface, and easy installation in home or multi-purpose building. Using this technology, the people can reduce the wastage of electrical power by regular monitoring of home appliances or the proper ON/OFF schedule of the devices. Paralleling advances in the concept of the Internet of things. The current project presents the Implementation of an inexpensive home automation and safety system, within the framework of assistive technology. The system implementation is based on the Single Board Computer (Raspberry Pi), with Online and Offline communications capability, and it is designed for use by the elderly and people with disabilities. The system is user-friendly, with an intuitive interface implemented on a Mobile, Web and Smart Control Panel which has touch screen feature and runs software which can be used to control and monitor every single device connected to it. Demonstrations show that the system facilitates control of home appliances, lights, heating, cooling systems and security devices such as Gas leakage detector, fire alarm and authentication-based door locking system by the intended users, i.e., the elderly and the disabled.

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Electric Grass Cutter with IoT Based Battery Monitoring System

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Abstract:

The "Electric grass cutter with IoT based battery monitoring system" is battery operated device aimed to perform efficiently and also to reduce the negative impact on environment due to conventional method.Providing affordable production model to farmers a highly powerful grass cutters capable of providing enough torque and speed meeting present industry standards. Also including battery monitoring system to monitor battery statistics like Battery percentage, Battery voltage, Battery temperature etc,,. As it is equipped with NODE MCU Wi-Fi module which frequently updates battery data to server through api of Thingspeak.This system doesn't require human intervention for the updation by this method one can even access the data from anywhere in the world.

Keywords:

Electric grass cutter, IoT based Battery Monitoring System (BMS), Node MCU,Thingspeak.

INTRODUCTION

A Battery operated Grass cutter is a simple mini project with a purpose of providing a reliable alternative for the traditional petrol based grass cutters and also to provide an affordable device for farmers.

The purpose of including battery monitoring system is to help them to get aware of their battery status befor using the device,this ensures that battery is capable of running for desired durations before getting emptied.

The prototype of BMS can also be used in other applications such as in electric vehicles etc,,.

EXISTING SYSTEM

Almost all existing grass cutters are powered by petrol engines.They use polluting fuels such as petroleum,which are harmful to the environment.The initial cost is also huge.Even the operating cost is comparatively high.It also requires professionals to use it effectively due to its complexity and bulkier form.It is also dangerous to handle as the fuel used is flammable.Even it has so many moving parts resulting in noise and vibrations.Frequent servicing of the petrol engine is an additional cost which again increases the maintenance cost.

PROPOSED SYSTEM

Thereby to overcome the problems faced in the existing system a new system is proposed here. Grass cutter earlier used to work through air pressurized by petrol engine is now replace by a powerful DC motor directlt attched to the cutter head.The customized blade is used to cut the hard thick shrubs and a nylon strip is used to cut thin grasses of thickness 1 inch approximately Addition to that we also have a battery monitoring system to monitor our power source for prolonged and assistive interface between user and the device.

The device is also light weight and can be operated by any age groups We also strive to replace every device including vehicles in agricultural domain to new electric technology with the help of batteries and this IoT based BMS serves a greater purpose and reach .

SYSTEM REQUIREMENTS

Hardware

1. DC775 Motor
2. PWM speed controller
3. Battery 24V 7.2Ah
4. Charger 24V,1A
5. PVC fittings
    a. $1^{1/4''}$ - 4ft length tube
    b. Tee – 2 nos
    c. 120 degree elbow – 1 nos
    d. 90 degree elbow – 1nos
    e. Cap – 1nos
    f. End cap – 1 nos
    g. Pvc glue – 1 nos
6. Connecting wires 1.5sq mm
7. Node-MCU 12E module
8. TP4056 Charging module
9. Resistors 100 kΩ - 2 nos

Software

1. Arduino IDE
2. Thingspeak

METHODOLOGY

1. **PVC materials** are used for external housing of electric grass cutter.
2. **DC 775 Bearing motor** is chosen as it has high torque and speed and also efficient and reliable.
    a. High Power 775 Bearing motor
    b. Overall Length: 98mm
    c. Shaft Tye - D shaft
    d. Diameter: 44 mm

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IOT Based Smart Industrial Panel Using Python for Speed Control and Monitoring of DC Motor

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Abstract:
Internet Of Thing (IOT) makes the monitoring and controlling process become accessible everyplace and every time. In this project, the IOT is used to monitor and control the speed of a DC Motor remotely through smart industrial panel web applications which can be accessed through mobile phone, laptops, system and smart gadgets. DC motor play's vital role in different industries. We have used Microcontroller, ESP 8266 wi-fi module and web server also with the help of some transducers we can easily achieve our goal to protect and control the motor as well as to monitor various parameters. We have provided several controls through internet to avoid faults in DC motor. The Industrial person can monitor the parameters using IOT smart industrial panel provided with unique login credentials which comes under the proposed system. When a person login to the IOT platform using the credentials, he/she can choose the appropriate motor to turn on, off or to vary the speed from the remote location and, can monitor the real time voltage current flowing through it. The control signal with the information containing speed, read API id, DC motor id will be sent to the microcontroller through an http request. Micro controller will verify for the API and sends initial control signal to the controller. This makes the DC motor to run at particular speed. The status of the motor will be displayed in the localized display block and web application in real time.

Keywords:
Raspberry Pi Pico, WIFI, Anti Clockwise, sensor.

INTRODUCTION

DC motors are very useful for various applications because of their wide range of speed control and relatively small size. In previous time for controlling or operating two or more motors the workers need to go to respective location where the motor is placed but with the help of this technology the operator can easily control all motors of the plant from a single control room. Also, for checking various parameters of motor like current and voltage we have to use measuring

instrument but with the help of this project we can continuously monitor the parameters on a single computer screen. Various faults like short circuit fault are very common in DC motors to avoid these faults our system provide protection to DC motor. Speed control means intentional change of drive speed to a value required for performing the specific work process. This concept of speed control or adjustment should not be taken to include the natural change in speed which occurs due to change in the load on the shaft. Any given piece of industrial equipment may have its speed change or adjusted mechanically by means of stepped pulleys, sets of change gears, variable speed friction clutch mechanism and other mechanical devices. Historically it is proved to be the first step in transition from nonadjustable speed to adjustable speed drive. The electrical speed control has many economical as well as engineering advantages over mechanical speed control the nature of the speed control requirement for an industrial drive depends upon its type. Some drives may require continues variation of speed for the whole of the range from zero to full speed or over a portion of this range, while the others may require two or more fixed speeds.

SYTEM REQIUREMENTS

Hardware

1. Microcontroller RP2040
2. DC Motor.
3. Step-Down Transformer.
4. Speed Sensor
5. Voltage and Current Sensor
6. 16x2 LCD Display.
7. WIFI Module ESP8266.
8. MOSFET.
9. Diode.
10. Opto isolator

Software

1. VS CODE Editor.
2. THONNY IDE.
3. PYTHON IDE.
4. DJANGO

METHODOLOGY

The entire project is depending on IOT based embedded system so interfacing of all hardware with wi-fi and internet is very important part in its functioning. The whole programming is done in Python IDE and then it is load in the Node MCU and with the help of wi-fi and various sensors we have achieved the required goals like protection to motor from over voltage or faulty conditions. Also study and observing of various parameters of motor like current and voltage. Controlling of motor is another very important feature in this project.

1. Development of controller circuit for the speed control of DC motor using PWM method.
2. Design of python based smart Industrial IOT panel.

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Empowering Smart Cities with IoT-Assisted Intelligent Parking Systems

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ABSTRACT: The transformation of existing infrastructure into smart cities cannot ignore the smart management of the parking systems. The cities with high population density (Metro cities inclusive) specifically face the problem of finding the nearest available parking space. The rising number of vehicles daily makes this problem more severe that questions the safety of vehicles as well. In this study, the issue of finding parking spaces in smart cities is addressed using an IoT-based methodology. The proposed Intelligent Parking System (IPS) consists of an IoT framework that collects real-time data, send it to the cloud, and thereby suggests to the user a suitable place for parking the vehicle at a nearby location. As a component of the framework, a mobile application has been developed that enables users to check the availability of nearby parking spots and subsequently reserve a parking place. This paper also describes different use-cases of a person for finding a parking space and parking it in right place. IoT-based smart parking system transmits available and occupied parking spaces via a web/mobile application. Each parking space has an IoT gadget, which includes sensors and microcontrollers. The user gets real-time updates on the availability of all parking spaces and, therefore, an option to choose the best one.

KEYWORDS: Internet of Things IoT; Smart Parking System; RFID; Sensors, Cloud.

I. INTRODUCTION

The second-most populous nation in the world is India. The expansion and development in the Indian cities do not hold a decent architecture for the parking spaces. If this happens for a long time, we would get the result as an increased number of cars is inversely proportional to the available parking spaces. As many people travel to new and unfamiliar areas due to work, there is a high chance they might not be familiar with the neighbourhood. Therefore, they might not have an idea about the parking space locations. This might lead them to park their vehicles in non-parking areas and might end up getting them fined which leads to other consequences from their workspace In addition, even if they know the location, they cannot go to the parking location without a guarantee of slot availability as they risk their valuable time. Nowadays, searching for car parking is becoming the greatest challenge in large cities during peak hours. SPS-Smart Parking System is an essential element of the transportation system in the smart city concept. In highly compact and densely populated sectors in urban areas, scarcity of parking space is a major problem. According to the authors in, around 30% of the vehicles on the roads of major cities are manually searching for vacant parking lots and it takes around 7.8 min to find a suitable parking lot. The survey talks about the severe wastage of time and the initiation of traffic congestions around the big cities. It also causes fuel wastage, driver frustration, and air pollution. Corresponding to, traffic congestion affects the fuel consumption rate. As a result, the emission of Carbon Monoxide (CO), Carbon Dioxide (CO2), Volatile Organic Compounds (VOCs), Hydrocarbons (HCs), and Nitrogen Oxides (NOx) increases, which result in air pollution.

Therefore, an intelligent framework was proposed to find out the parking slot efficiently (i.e., no wastage of parking space and searching in less time). The proposed framework in the present paper is aimed to keep track of the available parking slots in real-time and display the nearest available parking spaces and slots available to a user after their location is confirmed[1].

II. RELATED WORK

In [2] The rapid advancement in the internet, communication, and information technology have paved the way for developing efficient smart parking systems at a relatively lower price. Due to this reason, many researchers have implemented various SPS based on different approaches and sensors. The paper provided a brief description of the SPSs and compared them to highlight their strengths and limitations. Therefore, depending on functionality, certain SPSs are effective in certain conditions. As a result, it becomes necessary to compare SPSs based on methods, sensors, networking techniques, computational approaches, and services. [3]. This paper works with the IOT based things as Car parking increases with the number of car users. With the increased use of smartphones and their applications, users prefer mobile phone-based solutions. This paper proposes the Smart Parking Management System (SPMS) that depends on Arduino parts, Android applications, and based on IoT. In [4] This paper shows how the data gets transmitted in the devices which extracts the relevant information and sends it to the Arduino device which gives the command instruction for the data to the particular devices simultaneously. Arduino sends the signal to the servo motor along with GSM module which further gives instructions and notification to the user. When the user enters in the parking area, RFID card allotted to the

IoT-Equipped and AI-Enabled Next Generation Smart Agriculture

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ABSTRACT: Smart agriculture techniques have recently seen widespread interest by farmers. This is driven by several factors, which include the widespread availability of economically priced, low-powered Internet of Things (IoT) based wireless sensors to remotely monitor and report conditions of the field, climate, and crops. This enables efficient management of resources like minimizing water requirements for irrigation and minimizing the use of toxic pesticides. Furthermore, the recent boom in Artificial Intelligence can enable farmers to deploy autonomous farming machinery and make better predictions of the future based on present and past conditions to minimize crop diseases and pest infestation. Together these two enabling technologies have revolutionized conventional agriculture practices. This survey paper provides: (a) A detailed tutorial on the available advancements in the field of smart agriculture systems through IoT technologies and AI techniques; (b) A critical review of these two available technologies and challenges in their widespread deployment; and (c) An in-depth discussion about the future trends including both technological and social, when smart agriculture systems will be widely adopted by the farmers globally.

KEYWORDS: Smart agriculture, Internet of Things (IoT), CNN

I. INTRODUCTION

As per the recent report by the UNESCO World Water Assessment Program (WWAP), the world's population will increase by 33% in 2050, doubling the need for food and water. This will have serious consequences for the whole world, especially the developing nations. Amongst the ubiquitous Internet of Things (IoT) technology, smart agriculture is one the most important emerging application. Smart Agriculture Systems (SAS) are driven by several key factors, which include the adoption of IoT technologies for remote, unmanned monitoring of the agriculture fields and taking corrective actions to make the environment most conducive for crop growth. SAS depends on a combination of hardware and software technologies for optimum benefits. The hardware side is now well supported by the availability of inexpensive, portable, power-efficient hardware with wireless connectivity, which enables their deployment in large numbers across vast indoor and outdoor agriculture fields. Rugged hardware modules may be installed underground to measure soil conditions, while others may withstand harsh climate conditions such as sunlight, rain, and extreme humidity. Other specialized hardware includes Graphical Processing Units (GPUs), which can process large amounts of data gathered by these modules as dictated by software-based Artificial Intelligence (AI) frameworks. On the software side, the recent boom in AI and Big Data technologies supports not only the managing of large amounts of data accumulated by hardware modules but also to give this data as input to state-of-the-art, AI-based predictors, which can give more well-informed decisions to the farmer. They can efficiently analyze the latest trends in the data and provide several insights to the farmer. These benefits range from greater crop productivity, saving of tightly managed resources such as water for irrigation purposes, and minimization of the use of toxic chemicals such as those used in fertilizers, pesticides, and herbicides. Such a level of control over agriculture not previously possible gives the farmer greater flexibility and insight to plan his activities, such as determining what crops will result in optimum yield under existing and predicted climatic conditions. It keeps him well informed about his current and projected use of permissible fertilizer and pesticide use. It also helps him regulate the usage of tightly managed resources such as water for irrigation purposes. This paper presents a detailed review of the architectures of first-generation smart farms relying on various wireless sensors and communications technologies around which IoT technologies in SAS are based. We then discuss how recent advancements in AI-powered algorithms based on Deep Learning (DL) can use the collected data from diverse sources. This data can be collected from a large number of IoT sensors and imagery from unmanned aerial vehicles (UAVs) in different geographically diverse smart agriculture fields to make more accurate and informed decisions for pest detection, plant diseases, smart irrigation, limited use of herbicides, and other harmful substances. We then review the current state-of-the-art technologies, implementation challenges associated with them, and future trends and direction in SAS.

In terms of significant contributions, this seminar has presented.

1. A detailed tutorial on the available advancements in the field of SAS through IoT technologies and AI techniques.
2. A critical review of these two available technologies and challenges in their widespread deployment.
3. An in-depth discussion about the future trends including both technological and social, when SASs will be widely adopted by the farmers globally.

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Vibration Based Fault Detection In Drone Using Artificial Intillegent

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ABSTRACT: In recent years, there has been a significant rise in the examination of drones. Numerous scholarly articles have been published, exploring various aspects such as control optimization, fault detection, and safety mechanisms. However, when it comes to fault detection, the majority of studies have concentrated on faulty propellers and rotors, with minimal academic research on drone arms. This paper introduces a fault detection method that employs artificial intelligence (AI) and focuses on detecting faults in multirotor arms through vibration analysis. In certain instances, the arms of multirotors may develop cracks or loosen due to accidents. These issues are typically undetectable without disassembling the drone, but if left unattended, they can lead to sudden loss of flight stability and eventual crashes. The study incorporates different AI techniques, specifically fuzzy logic, neuro-fuzzy, and neural network (NN), to compare their effectiveness in predicting multirotor safety. Fuzzy logic and neuro-fuzzy methods yield satisfactory decision-making capabilities, but the performance of the neuro-fuzzy approach heavily relies on the dataset used, as an overfit model can result in incorrect decision-making. This also applies to the NN technique. Since the vibration data collection takes place in a controlled laboratory environment without considering wind effects, this framework is more suitable for early prediction before outdoor flights of multirotor.

KEYWORDS: Artificial intelligence, fault detection, drones, vibration analysis, Internet of Things (IoT)

I. INTRODUCTION

This describes a proposed vibration-based fault detection system for drones, with a focus on the multirotor arms. The system uses artificial intelligence techniques such as fuzzy logic, neuro-fuzzy, and neural networks to predict the safety of the multirotor. The vibration data is collected in a laboratory environment without wind effects, making it more suitable for early prediction before flying the multirotor in the outdoor environment. The proposed system includes a mobile application that allows users to monitor the condition of the multirotor in real-time. The study uses four vibration sensors attached to the multirotor arms to collect data under different conditions. The collected data is used to train and test three AI models: fuzzy logic, neuro-fuzzy, and artificial neural networks. The results show that all models can accurately detect faults, but the fuzzy logic, ANFIS 2, and NN 2 models perform better than the others. The fault detection system based on fuzzy logic is incorporated into the multirotor for real-time application, which can be monitored using a smartphone. The study is limited to only one parameter, which is the multirotor arms, and can be extended by including other parameters such as propeller vibration, motor condition, and battery level. This subsection describes the user interface of the proposed fault detection system. The system includes a mobile application that allows users to monitor the condition of the multirotor in real time. The application is created using the MIT app Inventor, which is an open-source web application that permits users to design software applications for the Android operating system. The application shows three possible decisions, which are green, referring to safe to operate, yellow, referring to partially safe, and red, referring to not safe to operate. The decision-making can be monitored in the smartphone through the application created and the HC05 Bluetooth module. The study shows that the fuzzy logic model performed better compared to the ANFIS and NN models, which in some cases, provided inaccurate decision-making results. The ANFIS 2 is a good fit model because it produced acceptable results in training as well as when fed with new randomly generated data.

II. RELATED WORK

[1] A paper was published performed an experimental modal analysis (EMA) and numerical simulation to identify the multirotor frame's dynamic characteristics in terms of mode shapes and natural frequencies. This approach allows for the identification of low-vibration regions where it is optimal to mount sensitive electronics to mitigate potential damage or malfunction caused by vibrations.[2] A paper was published that conducted a comparable investigation to develop an anti-vibration framework for multirotor that included the identification of the most effective damper and isolator based on their performance. Their study revealed that the structural vibration generated a significantly higher vibration amplitude compared to motor vibration. By employing the proposed damper and isolator, they were able to reduce the vibration amplitude.[3] A paper was published that conducted

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A Hybrid Deep Learning Model for Real-time Fatigue Prediction in Sports Utilizing GPS Data and Rate of Perceived Exertion

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ABSTRACT Fatigue is a common issue in sports that can lead to injuries and decrease athlete performance. This paper proposes a deep learning-based system for fatigue prediction in sports using GPS and RPE data. The proposed system can accurately predict fatigue levels in athletes and can be useful for coaches and sports scientists in optimizing athlete performance and preventing injuries. The proposed system uses a combination of GPS and RPE data for fatigue prediction, which provides a more comprehensive picture of the athlete's physical condition and fatigue level. The deep learning approach used in the proposed model can handle complex and nonlinear relationships between the input features and the output variable. The model architecture consists of several convolutional and recurrent layers, which can learn and extract meaningful features from the input data. Experimental results show that the proposed system achieved high accuracy and precision in predicting fatigue levels in athletes. The system's performance was evaluated using various evaluation metrics such as accuracy, precision, mean absolute error (MAE), and root mean square error (RMSE). In conclusion, the proposed system is a promising approach for fatigue prediction in sports using GPS and RPE data. The system overcomes several limitations of traditional machine learning approaches and provides a more comprehensive picture of the athlete's physical condition and fatigue level. The proposed system can be useful for coaches and sports scientists in optimizing athlete performance and preventing injuries, thus contributing to the development of sports science and technology.

KEYWORDS Fatigue prediction, Sports performance, GPS data, RPE data, Machine learning, Deep learning, Convolutional neural networks, Recurrent neural networks, Feature extraction, Data analysis, Training load, Athlete monitoring, Injury prevention

I. INTRODUCTION

Fatigue is a common issue that affects people in many different contexts, including the workplace, sports, and daily life. Detecting and predicting fatigue can help individuals take preventative measures to avoid injury or decrease productivity loss. In recent years, machine learning techniques have been used to predict fatigue, but the accuracy of these models is often limited. In this paper, we explore the use of a novel deep learning architecture called FatigueNet, which is specifically designed for predicting and detecting fatigue. We compare the performance of FatigueNet with other commonly used machine learning models on a dataset of physiological signals obtained from individuals performing physical activity. Our results show that FatigueNet outperforms these other models, demonstrating its potential for use in predicting and detecting fatigue. This paper provides an important contribution to the field of fatigue prediction and has implications for a wide range of applications, including sports science, occupational health, and wearable technology.

Fig. 1.1 Technology in Sports

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A Framework For Malware Detection In Android Applications Using Machine Learning Techniques

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ABSTRACT: Android is one of the most used operating systems in smartphone technology. This is the main reason; Android has become the favorite target for hackers and attackers. Malicious codes are being embedded in Android applications in such a sophisticated manner that detecting and identifying an application as a malware has become the toughest job for security providers. In terms of ingenuity and cognition, Android malware has progressed to the point where they're more impervious to conventional detection techniques. Approaches based on machine learning have emerged as a much more effective way to tackle the intricacy and originality of developing Android threats. They function by first identifying current patterns of malware activity and then using this information to distinguish between identified threats and unidentified threats with unknown behavior. Firstly, we propose a model that incorporates more innovative static feature sets with the largest current datasets of malware samples than conventional methods. Secondly, we have used ensemble learning with machine learning algorithms i.e., AdaBoost, Support Vector Machine (SVM), etc. to improve our model's performance. Our experimental results and findings exhibit 96.24% accuracy to detect extracted malware from Android applications, with a 0.3 False Positive Rate (FPR). The proposed model incorporates ignored detrimental features such as permissions, intents, Application Programming Interface (API) calls, and so on.

KEYWORDS: Android applications, benign, feature extraction, malware detection,

I. INTRODUCTION

Mobile devices are an integral part of most people's daily lives. Furthermore, Android now controls the vast majority of mobile devices, with Android devices accounting for an average of 80% of the global market share over the past years. With the ongoing plan of Android to a growing range of smartphones and consumers around the world, malware targeting Android devices has increased as well. Since it is an open-source operating system, the level of danger it poses, with malware authors and programmers implementing unwanted permissions, features and application components in Android apps. The option to expand its capabilities with third-party software is also appealing, but this capability comes with the risk of malicious attacks. When the number of smartphone apps increases, so does the security problem with unnecessary access to different personal resources. As a result, the applications are becoming more insecure, and they are stealing personal information, SMS frauds, ransomware, etc.

There are major issues to be addressed to incorporate our strategy. High measurements of the features will make it difficult to identify malware in many real-world Android applications. Certain features overlap with innocuous apps and malware. In comparison, the vast number of features will cause high throughput computing. Therefore, we can learn from the features directly derived from Android apps, the most popular and significant features. The paper implements prediction models and various computer ensemble teaching strategies to boost and enhance accuracy to resolve this problem. Feature selection is an essential step in all machine-based learning approaches. The optimum collection of features will not only help boost the outcomes of tests but will also help to reduce the compass of most machine-based learning algorithm.

II. RELATED WORK

In contrast to static analysis methods such as a assessment of AndroidManifest.xml, source files and Dalvik Byte code and complex analysis of a managed environment to study the way it treats a program, Machine Learning includes learning the fundamental rules and habits of the positive and malicious settings of apps and then data-enabling. The static attributes derived from an application are extensively used in machine learning methodologies and the tedious task of this can be relieved if the static features of reverse-engineered Android Applications are extracted and use machine learning SVM algorithm, logistic progression, ensemble learning and other algorithms to help train the model for prediction of these malware applications. Machine learning employs a range of methodologies for data classification. SVM is a strong learner that plots each data item as a point in n-dimensional space (where n denotes the number of features you have), with the value of each feature becoming the vector value. Afterward, it performs classification by locating the hyperplane that best distinguishes the two groups, thereby improving the recognition properties of any two parameters. Conversely, boosting or ensemble techniques like Adaboost assigns higher weights to improve the behavior of misclassified variables in conjunction with other machine learning algorithms. If combined along with weak classifiers, our preliminary model benefits from deploying such models since they have a high degree of

A Patient-Specific Machine Learning Model for Hepatitis C Diagnosis

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ABSTRACT: The scientific field of disease diagnostics has benefited greatly from the application of machine learning, which is now ubiquitous in many different industries. However, traditional machine learning models are general- purpose, i.e., they use a single model to assess the health status of many individuals. Using a universal machine learning algorithm, It depends on how much computing power can typically handle a large amount of data. Describethe model's performance and the reasons why it is unable to yield the ideal results for a given problem. In this work, wepropose that a different model be trained for each patient, enhancing the model's accuracy and usability. The problem isapproached in this study from three separate directions: targeted data processing, patient-related data-incorporating model structure design, and hyper parameter-tailored optimisation. Using a customised model to diagnose a patient provides the advantages of high accuracy, great confidence, and little utilisation of resources, according to preliminary experimental results. We used a smaller dataset (only 615 individuals' data) and had no prior knowledge of the subject, yet we were still able to achieve over 99% accuracy and 94% recalls in the Hepatitis C dataset. Conventional algorithms like XG Boost and multi algorithm ensembles have recall and accuracy rates that are less than 95%. The custom-made model was able to recognise 53 individuals out of a total of 56 patients, 20 more than earlier techniques, making it a special and efficient tool for future hepatitis C prevention and treatment effort

KEYWORDS: Machine Learning, a unique model, the detection of hepatitis C, data augmentation and parameter optimisation

I. INTRODUCTION

Hepatitis C is a dangerous and stealthy virus that primarily affects the liver, often without causing symptoms until it has caused significant damage. The virus can remain in the body for 10-20 years without detection, leading to chronic infection and liver damage. Testing is crucial for early diagnosis, and liver function tests are a common tool used in regular check-ups. However, antibody and RNA tests are more specific but can be expensive and invasive. Machine learning models show promise in medical diagnosis, but ethical considerations and custom models are necessary for the best results. This paper proposes a machine learning model for hepatitis C diagnosis customized to each case, achieving better accuracy than traditional methods. The dataset and experimental results are presented, and the study concludes with a summary and outlook. Early detection and treatment are essential for preventing serious liver damage from hepatitis C.

II RELATED WORK

Previous studies have explored the use of ML models for HCV diagnosis, including decision trees, logistic regression, support vector machines (SVM), and artificial neural networks (ANN). However, these models have limitations in handling complex and heterogeneous data and may produce suboptimal results in certain patient populations. To address these limitations, feature selection techniques such as principal component analysis (PCA), independentcomponent analysis (ICA), and recursive feature elimination (RFE) have been used to identify the most relevant features for HCV diagnosis. However, these techniques are not optimized for individual patient characteristics and data quality and may not be applicable to all patients.

III PROBLEM STATEMENT

Existing system: To detect specific antibodies or viral RNA in the blood. The procedure involves testing the patient's blood sample for HCV antibodies or RNA to confirm the presence of the disease Limitations of traditional diagnostic methods include: Negative results: Sometimes patients may be infected with HCV, but their antibodies may be negative. This may cause delays in diagnosis and treatment. False Positive Results: Likewise, some patients may test positive for HCV antibodies even if they are not actively infected. This can lead to unnecessary testing and treatment.

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Agriculture Text Classification Using Multisensor Data Fusion and Machine Learning to Increase Crop Yield

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ABSTRACT: Sensors are now used by farmers and agronomists to help them improve their operations. They use sensor data transmitted via IoT to remotely monitor their crops. Farmers today manage crops in a controlled environment to increase yields in the name of modern farming. Crop productivity, on the other hand, is influenced by the severity of the weather and disease variations. The primary objective of this paper is to present a novel Multisensor Machine-Learning Approach (MMLA) for classifying multisensor data. The fusion strategy supports high-quality data analysis in agricultural contexts for cultivation recommendations. Based on the proposed recommendation system, eight crops were classified: cotton, gram, groundnut, maize, moong, paddy, sugarcane, and wheat. Crop species were classified using three machine learning algorithms: J48 Decision Tree, Hoeffding Tree, and Random Forest. To evaluate the performance of the proposed multitext classifier, only the top eight classes were investigated. The classifier's performance is measured in terms of precision, recall, F-measure, MCC, ROC Area, and PRC Area class, and the results are compared with the state-of-the-art classifiers. The Random forest algorithm has the lowest error measure of RMSE at 13%, RAE at 38.67%, and RRSE at 44.21%, demonstrating effectiveness in classifying the agriculture text. Thus, the use of a multisensor data fusion approach based on crop recommendation provides greater precision in prediction, resulting in a significant increase in crop yield while also creating awareness in the condition based environmental monitoring system.

KEYWORDS**: Agriculture, crop yield, cultivation recommendation, farmers, multisensor, machine learning**

I. INTRODUCTION

A large portion of Asian countries is reliant on agriculture. The expansion of agricultural-based enterprises lacks quality assurance. In the name of modern farming, farmers today manage crops in a controlled atmosphere to increase yield. However, the severity of the weather and the variability in disease are impacted by crop productivity. Consequently, a novel monitoring and information technology-based application, such as the Internet of Things (IoT), is required. Decisions about irrigation, climate change, soil nutrition, etc., may be managed once the precise status of crops is understood. This significantly raises the production of crops whose quality deteriorated because of environmental effects. Farmers and agronomists employ a sensor today, which helps them improve their operations. They remotely monitor their crops using sensor data that is transmitted via IoT. The machinery is controlled, and depending on its condition, the robots are given instructions to perform the necessary agricultural chores. The advent of the Green Revolution has advanced agricultural methods. The usages of fertilizer and irrigation management are examples of this. The amount of agricultural produce has doubled despite the expansion of agricultural fields. Farmers' involvement in croplands has increased by 12% and there is dependable irrigation. The main consumption, as mentioned before, is the use of freshwater resources. The water was taken out of the aquifers of groundwater. The need for food is growing as the world's population expands. Even stranger things are happening in arid and semi-arid areas. Although modern agricultural practices have improved food production, they have nonetheless harmed the environment. This encompasses areas including global food security, climate change, and water exchange. Concerns about finding a solution to the world's rising food demands have emerged. The food crisis is largely predicted by these economic and societal factors. There must be one billion hectares of additional croplands by the year 2050. Because of this, the growth of forests is constrained, which presents a challenge for farmers. To fit into socially approved production systems, farmers are trying. Accurate monitoring and sustainable crop production are needed to meet the growing demand. Monitoring seasonal crop growth is part of monitoring vegetation dynamics. However, it requires the delivery of products that promote environmental sustainability. Additionally, the developed crop inventories must be dependable and regular. To solve this problem, it is essential to gather very accurate crop status information and make reasonable decisions about how to control irrigation, change climate variables, or improve soil nutrition in agricultural settings. With the use of machine learning the current study provides an effective approach to facilitate intelligent management and decision-making in crop categorization for healthy and quality crop growing. Moreover, there is increasing agricultural success with the use of machine learning as it takes advantage of the availability of varied sensors, cameras, and smartphones. The classification and mapping of agricultural plants are extremely valuable for agricultural monitoring and food security. Although it has been discovered that optical data collected later in the growing season offers the best overall classification accuracy, operational crop mapping is faced with two difficulties as a result. One is that cloud cover may prevent late-season optical data from being available. The other issue is that crop identification at an earlier stage of the growing season is hindered by the dependence on late-season photography. Hence it is necessary to unravel, quantify, and understand data-intensive processes in agricultural operational environments.

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The Application of Virtual Reality in Games

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ABSTRACT: Virtual reality technology is a rapid development of technology in recent years, for the development of the field of video games has a vital role. Using image display, human computer interaction, and other technologies to generate a three-dimensional environment. Enable participants to interact and manipulate virtual environments and objects in real-time. This paper analyzes the characteristics of virtual reality technology and expounds application of virtual reality technology in video games. Through the background, the characteristics of VR technology are analyzed. Furthermore, we discuss and analyze the interactive influence of virtual reality on games from the aspects of game sound production and somatosensory interaction. Besides, this article also analyzes the differences between traditional 2D games and virtual reality based games (Horror games and Escape rooms, for example). Finally, it summarizes the electronic games on virtual reality equipment, shows the positive impact of virtual reality on economy and society, and looks into the future of virtual reality.

KEYWORDS: virtual reality, 3D games, immersive experience, somatosensory interaction

I. INTRODUCTION

Virtual reality (VR) is a new science and technology developed in the 20th century. As a computer-aided generation of a high-tech simulation system, Virtual reality is a new technology that generates three-dimensional virtual world by computer computing simulation. Users get sensory simulations similar to those of the real world, such as audio, visual and touch. Compared with traditional computer technology, virtual reality allows users to have more timely immersive feedback when observing and interacting in a three-dimensional environment. With the continuous development of social productivity and science and technology, VR technology has made great progress and gradually become a new field of science and technology. There is a growing demand for this new technology in many industries, especially in the game industry. Many 3D games require interaction in a three-dimensional environment, and virtual reality technology can provide a more realistic environment. As mentioned earlier, virtual reality technology uses computer-generated three-dimensional space as the basis for three-dimensional games. Games using this technology can greatly enhance the realism of the game while ensuring real-time and interactivity. Although VR technology has been widely developed in the field of games, the relevant literatures are not thorough and comprehensive enough to summarize the field [3-5]. Therefore, this paper analyzes and summarizes the characteristics of VR technology from the perspective of VR development. Then, the influence of virtual reality on games is discussed from the aspects of sound production and motion sensing interaction. In addition, this article also analyzes the differences between traditional 2D games and virtual reality based games. Finally, it summarizes the role of VR in interactive games and the impact of VR on the video game industry.

II. RELATED WORK

Virtual reality gaming experiences have been found to be more immersive and engaging compared to traditional gaming experiences. Researchers have explored how virtual reality can be used to enhance the gameplay experience by providing a more interactive and immersive environment. Haptic feedback devices have also been explored in virtual reality gaming to add a new dimension of physical sensation to the gaming experience. This technology can provide the player with a sense of touch and improve the level of immersion in the game. Virtual reality games have also been studied for their potential benefits in health and therapy settings. Research has explored how virtual reality games can be used to assist in physical therapy and rehabilitation by providing a more engaging and motivating environment for patients. The design of virtual reality games for children with special needs has also been explored. Studies have focused on developing games that cater to the needs of children with autism, for example, by using storytelling and non-verbal communication to improve their social skills In summary, the application of virtual reality in games has been explored in various ways, from enhancing gameplay experience to its potential benefits in health and therapy settings

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End-to-End Data Quality Assessment Using Trust for Data Shared IoT Deployments

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ABSTRACT: Continued development of communication technologies has led to widespread Internet-of- Things (IoT) integration into various domains, including health, manufacturing, automotive, and precision agriculture. This has further led to the increased sharing of data among such domains to foster innovation. Most of these IoT deployments. This can lead to sharing of inaccurate or inconsistent data. There is a significant need to assess the quality of the collected data, should it be shared with multiple application domains, as inconsistencies in the data could have financial or health ramifications. This article builds on the recent research on trust metrics and presents a framework to integrate such metrics into the IoT data cycle for real-time data quality assessment. Critically, this article adopts a mechanism to facilitate end- user parameterizationof a trust metric tailoring its use in the framework. Trust is a well- established metric that has been used to determine the validity of a piece or source of data in crowd-sourced or other unreliable data collection techniques such as that in IoT. The article further discusses how the trust-based framework eliminates the requirement for a gold standard and provides visibilityinto data quality assessment throughout the big data model. To qualify the use of trust as a measure of quality, an experimentis conducted using data collected from an IoT deployment of sensors to measure air quality in which low-cost sensors were co located with a gold standard reference sensor. The calculated trust metric is compared with two well-understood metrics for data quality, root mean square error (RMSE), and mean absolute error (MAE). A strong correlation between the trust metric and the comparison metrics shows that trust may be used as an indicative quality metric for data quality. The metric incorporates the additional benefit of its ability for use in low context scenarios, as opposed to RMSE and MAE, which require a reference for comparison.

KEYWORDS: Internet of Things; health ramifications; root mean square error; gold standard reference sensor; end to end parameterization.

I. INTRODUCTION

The Internet-of-Things (IoT) paradigm has seen tremendous growth in the industry in the last five years. The number of connected devices in various sectors has also grown. This has, in turn, led to an increase in the amount of data generated and consumed. This exponential increase in data collected and consumed led to the IoT big data wave. This is characterized by volume, velocity, variety, veracity, and value, the 5V's of big data. As this data is collected, it must undergo several stages from collection to decision-making. These stages form the big data model. The big data model is a series of stages that the data must undergo from when it is created to when it is used. Each preceding stage is critical for the success of the next stage Data collection, data pre-processing, data processing, and data use are separate stages of the big data model. For each stage, data can have different properties, and therefore, data quality has to be assessed separately but also represented differently. This is equally true for different data users and applications within the IoT ecosystem. The data generated and consumed within IoT comes from several domains including, but not limited, to: 1) smart homes; 2) smart cities; 3) manufacturing; and 4) automotive illustrated where each trust stage is decoupled and integrated into the BDC.

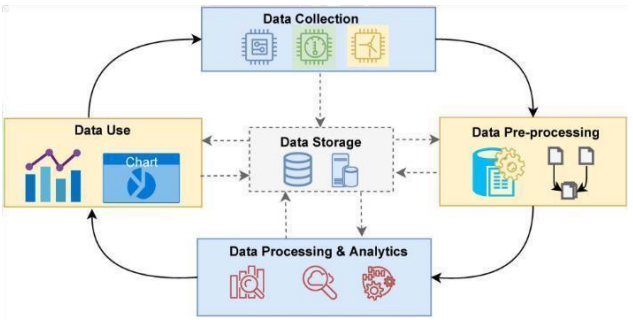

Fig. 1. Big data model

A Digital Twin Based Approach to Restructure the Car-Sharing System for a Smart Society

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ABSTRACT: An approach based on a digital twin is suggested to enhance the optimization of the transportation process in a car-sharing system for an ultra-intelligent community. The system comprises self-governing vehicles equipped with V2X communication capabilities and a centralized digital twin system that gathers real-time data from the vehicles and provides feedback for improved decision-making. The suggested system was compared to a traditional two-way car-sharing system through simulations, and the outcomes indicated that the digital twin-based system enhances the efficiency of transportation by reducing the required number of vehicles and decreasing the delivery duration. The application of the suggested system is discussed utilizing pertinent technologies like 5G-NR V2X, V2N communication, and AI algorithms. In general, a promising method is presented to augment the sustainability and effectiveness of car-sharing systems in an intelligent society.

KEYWORDS: Digital Twin Technology; Smart Transportation; 5G-NR V2X; V2N; Artificial Intelligence; Autonomous Vehicle

I. INTRODUCTION

Traditional car-sharing systems have long been favoured by city dwellers due to their convenience and affordability. However, they face various obstacles including limited vehicle use, high costs, and inflexible vehicle availability. This project proposes a novel car-sharing model that tackles these challenges through the utilization of digital twin technology. Digital twin technology involves creating a virtual replica of a physical system to simulate and enhance its performance. In the car-sharing context, a digital twin model can simulate and optimize vehicle usage within the system. This can result in enhanced vehicle utilization, reduced operating expenses, and an improved experience for service members. The suggested car-sharing model entails employing digital twins to simulate vehicle demand, optimize vehicle allocation to members, and monitor system performance. The digital twin model also enables the early detection of potential issues and implementation of corrective actions to maintain optimal system performance. A key advantage of this approach is its potential to mitigate the environmental impact of private car ownership. By establishing a more efficient car-sharing system, the project aims to reduce the number of cars on the road, leading to decreased traffic congestion, improved air quality, and lower carbon emissions. Overall, the system strives to create a sustainable and cost-effective transportation alternative for urban residents by leveraging digital twin technology. Through the optimization of vehicle usage within the system, the project aims to lower operating costs, enhance user experience, and minimize the environmental footprint of private car ownership.

II. RELATED WORK

A digital twin approach was proposed in [1] to optimize the performance of car-sharing systems and make them more sustainable. The authors in [1] utilized data collected from car-sharing systems to create a digital twin model, which could be used to simulate the system's operation and identify areas for improvement. The impact of the digital twin approach on the system's efficiency and sustainability was evaluated in [1]. The results indicated that the digital twin approach could significantly reduce the system's operating costs and environmental impact while enhancing the user experience. It was concluded in the paper that digital twin technology has great potential to improve the sustainability of urban mobility systems.

In [2], the authors focussed on development of a digital twin for electric car-sharing systems. The need for advanced technologies to manage the increasing demand for electric vehicles in urban areas was highlighted by the authors in [2]. A digital twin-based approach was proposed in [2] to improve the management of electric car-sharing systems. A case study of an electric car-sharing system was presented in the paper, demonstrating how a digital twin could help optimize the system's operation, reduce operating costs, and improve customer satisfaction. Overall, the potential benefits of using a digital twin for electric car-sharing systems were highlighted and insights into the development of such systems were provided in [2].

A comprehensive review of the concept of digital twins and their applications in the context of smart cities was provided by the authors of [3]. The potential benefits of digital twins for smart city applications, such as urban planning, transportation, and energy management, were discussed. The challenges associated with the implementation of digital

CLOUD-BASED IOT SYSTEM FOR MONITORING ANDCONTROLLING OF WASTEWATER

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ABSTRACT: Wastewater treatment is considered the most important process for reducing pollutants in wastewater to levels that nature can cope with. At many Sewages treatment plants, industrial wastes cause more difficulties in the treatment process than any other single problem where the plant operators have to deal with. These plants may not be designed to handle these types of wastes and the accelerated deterioration of sewage treatment plant structures. In this paper, we propose a new IIoT cloud-based model for real-time wastewater monitoring and controlling. The proposed system monitors the power of hydrogen (pH) and temperature parameters from wastewater inlet which will be treated in Wastewater treatment plant and avoid impermissible industrial wastewater which the plant cannot deal with. The system collects and uploads real time sensor readings to the cloud via an IIoT Wi-Fi Module. Additionally, it reports observed or identified unexpected industrial wastewater inlets via SMS notifications and alarms and controls the valves of the gates. This is needed to change the path of the water to the industrial wastewater treatment plant that can treat this type of wastes. Experimental work shows the effectiveness of the proposed system compared to related work.

KEYWORDS Internet of things (IoT), Industrial internet of things (IIoT), industrial wastewater, sensors, Cloud-based IoT

I Introduction

Wastewater Treatment Is A Method Of Improving And Purifying Water By Removing Some Or All Pollutants, Allowing It To Be Reused Or Returned To The Environment. Surface Water, Such As Rivers Or The Ocean, Or Groundwater, Are Both Possible Destinations For Discharge. When Untreated Or Inadequately Treated Wastewater Is Discharged Into Water Sources, It Pollutes The Water. Which Degrades The Quality Of The Water. Egyptian Authorities Enacted Law 48 (1982) To Safeguard The Nile River And Waterways From Pollution. Only Treated Effluents Are Allowed Penetration To Release To Waterways, According To The Law, Which Is Clearly Recognized From Decree No. 8-1983. The Requirements And Specifications For Issuing The License, As Well As The Logistics Of Applications, Are Clearly Defined [1].However, Due To A Shortage Of Infrastructure, Technical And Institutional Expertise, As Well As Financial Resources, Egypt, Like Many Other Developing Countries, Continues To Release Untreated Wastewater. In Addition, Highly Efficient Wastewater Treatment Technologies Are In Short Supply, As Are Water Quality Monitoring And Control Systems [3]. Biological Treatment Is Now Used In The Majority Of Wastewater Treatment Plants. Biological Treatment Is An Essential Part Of Any Wastewater Treatment System [4]. It Is A Technology That Cleans Water Primarily By The Use Of Bacteria, Protozoa, And Maybe Other SpecialistMicroorganisms. The Benefit Of Biological Therapy Over Other Treatment Techniques Such As Chemical Oxidation, Thermal Oxidation, And So On Is Evident, Both In Terms Of Capital Investment And Operating Costs. As A Result, It Has Solidified Its Position In Any Integrated Wastewater Treatment Plant

II RELATED WORK

In [2] authors used average residual battery level of the entire network and it was calculated by adding two fields to the RREQ packet header of a on-demand routing algorithm i) average residual battery energy of the nodes on the path ii) number of hops that the RREQ packet has passed through. According to their equation retransmission time is proportional to residual battery energy. Those nodes having more battery energy than the average energy will be selected because its retransmission time will be less. Small hop count is selected at the stage when most of the nodes have same retransmission time. Individual battery power of a node is considered as a metric to prolong the network lifetime in [3]. Authors used an optimization function which considers nature of the packet, size of the packet and distance between the nodes, number of hops and transmission time are also considered for optimization. In [4] initial population for Genetic Algorithm has been computed from the multicast group which has a set of paths from source to destination and the calculated lifetime of each path. Lifetime of the path is used as a fitness function. Fitness function will select the highest chromosomes which is having highest lifetime. Cross over and mutation operators are used to enhance the selection. In [5] authors improved

DEVELOPING A FALL DETECTION SYSTEM WITH EDGE COMPUTING BASED ON ARTIFICIAL INTELLIGENCE

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ABSTRACT: Falls are the second leading cause of death from unintentional injuries in older adults. Although many systems have been used to detect falls, they are limited by the computational complexity of the algorithm. The images taken by the camera must be transmitted through a network to the back-end server for calculation. As the demand for Internet of Things increases, this architecture faces such problems as high bandwidth costs and server computing overload. Emerging methods reduce the workload of servers by transferring certain computing tasks from cloud servers to edge computing platforms.
To this end, this study developed a fall detection system based on neuromorphic computing hardware, which streamlines and transplants the neural network model of the back-end computer to the edge computing platform. Through the neural network model with integer 8-bit precision deployed on the edge computing platform, the object photos obtained by the camera are converted into human motion features, and a support vector machine is then used for classification. After experimental evaluation, an accuracy of 96% was reached, the detection speed of the overall system was 11.5 frames per second, and the power consumption was 0.3 W. This system can monitor the fall events of older adults in real time and over a long period. All data were calculated on the edge computing platform. The system only reports fall events via Wi-Fi, thereby protecting the privacy of the user.

KEYWORDS: Fall Detection System, Artificial Intelligent, Deep Learning, Real Time Analysis

I. INTRODUCTION

The older adult population is expected to reach 1.4 billion by 2030 and 2.1 billion by 2050. With age, older adults experience more impairment in vision, balance, and cognition, all of which increase the chances of a fall. Thirty percent of elderly people over 65 years fall at least once every year, causing severe or even fatal damage. However, only one-third of people received medical assistance following a fall. In traditional fall detection systems for older adults, sensors and cameras are used to track the motion of individuals, and the sensor data and image data are sent to servers for analysis. However, the main disadvantage of uploading a large amount of data to the cloud server is the resultant high cost in network bandwidth, high latency, and privacy concerns. With too many users, the network bandwidth and loading of the cloud computing may become unfeasible.

This study proposed a fall detection system based on edge computing, which combined a camera and neuromorphic computing hardware based on an application-specific integrated circuit. The You Only Look Once lightweight (YOLO-LW) deep neural network was implemented on the neuromorphic computing hardware. Experiments have validated that the YOLO-LW algorithm combined with a support vector machine (SVM) can run smoothly on the edge computing platform and can accurately detect fall events in real time. In this study, the captured images are not uploaded to the cloud server, so when a large number of cameras are installed in practical applications, fall detection system does not occupy additional large amount of bandwidth, and server is not blocked by processing images from all cameras at the same time. And the edge computing platform sends a warning to server only if a fall event is detected, so the transmission delay can be negligible. Thus, user privacy is protected to a certain extent.

II. RELATED WORK

Several studies on fall detection have been proposed to reduce older adult fall injuries or provide emergency assistance after falls . This section presents three categories of fall detection technologies: backend computing fall detection, edge computing fall detection, and cloud-edge computing fall detection.
Harrou et al proposed an integrated vision-based fall detection approach implemented on a backend computer. The integrated vision-based fall detection approach involves image processing (background subtraction), morphological processing (erosion and dilation operators), centroid calculation, generalized likelihood ratio (GLR) calculation, and SVM. Image processing is used to segment the human body from the picture of the University of Rzeszow (UR) fall detection dataset. The human body contour obtained through image processing is divided into five areas. The five areas

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Non-contact ServiceRobot Development in Fast Food Restaurants

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ABSTRACT: Given the prospect of low birth rate and aging population among developed countries, which further resulted in the shortage of workforces, service robots have been gradually applied to real-life from past academic research. This paper introduces the development of a service robot that is designed for food service in fast-food restaurants with the innovative improvement of mapping, localization, and navigation. Moreover, thisresearch took the initiative of integrating 3D point cloud map and 2D occupancy grid map (OGM) in order to build a PC-OGM. In another word, using the sensory fusion method allows the service robot to adapt to a more complicated environment as well as enhance its positioning. In terms of its navigation function, the adaptive motion controller is refifined so the service robot could navigate through narrow aisles smoothly. Finally, friendly contact-free food service robots were evaluated at fast-food restaurants in order to gain feedback from diners and waiters. Their feedback was broken down into 3 categories, availability, reliability, and satisfaction, for further analysis. As COVID-19 assails the world, we also look into future possibilities of food service robot deployment among restaurants to keep food and surface free from the virus.

KEYWORDS: sensory fusion, rilability, service, deployment

I. INTRODUCTION

Declining birth rate and aging population among developed countries has become a global concern. The above circumstance is especially attributable to the high cost and drop-out rate in the catering industry. As labor supply deteriorates signifificantly, the increased labor cost may encourage employers to adopt service robots. With the rapid development of arti- fificial intelligence and space perception technology automation has gradually shifted into commercial services from traditional industrial applications. Therefore, the utilization of service robots is being presented to enter the fifield of practical life. The demand for service robot applications such as tour guides, entertainment purposes, and package delivery are being progressively accepted by the current market. The inquiry for automated digital conversion in the catering industry has led to a new revolution in business demand. Upon introducing service robots into the catering fifields, the original labor-intensive work has been transformed into human-robot collaboration. In this research, the design and implementation of a food service robot including software and hardware system architecture will be introduced respectively. Moreover, this implemented food service robot is specififically designed to meet the needs for deployment in fast-food restaurants. In order to improve the application of service robots, the estimation fusion method is used for incorporating 3D point cloud map into 2D occupancy grid map. Within the integration of the above two maps, PC-OGM is created for improving the spatial orientation of the robot as well as elevating positioning accuracy in complex environments. In terms of the navigation function of the service robot, the adaptive motion controller is refifined so the service robot could navigate through narrow aisles smoothly. The experimental results including the comparison of the default methods with long-term fifield testing have proven the robustness of the system operation. Finally, the benefifits and opinions on applying this service robot in 15 actual fast-food restaurants in Taiwan are also being discussed. Moreover, thepossibility of service robot deployment during COVID-19 outbreak periods in order to maintain business while lowering infection rate was carried out for further discussion.

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II. RELATED WORK

A. LOCALIZATION AND MAPPING PROBLEM

An intelligent mobile robot is an artifificial intelligence system that applies multiple sensors to perceive environmental status to complete the task of navigating in uncertain environments. One of the fundamental challenges of intelligent mobile robot development is simultaneous localization and mapping problem (SLAM) also known as concurrent mapping and localization (CML). Cadena *et al.* have defifined three eras in the historical advancement of SLAM. The classical age (1986-2004) covered the essential formulations for SLAM characterized by Extended Kalman Filter (EKF) ,Blackwellized particle fifilters (RBPF) and maximum likelihood estimation (MLE) . The posterior age (2004-2015) is expressed and analyzed via algorithmic analysis for examining the observability, convergence, and consistency properties of SLAM. At present, the robust-perception age is taking place in SLAM research and is delineated by four essential criteria: robust performance, high-level understanding, resource awareness, and task-driven perception. All of them are still unsolved

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A conversation-driven approach for managing chatbot

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ABSTRACT: Managing and evolving a chatbot's content is a laborious process and there is still a lack of standardization. In this context of standardization, the absence of a management process can lead to bad user experiences with a chatbot. This work proposes the Chatbot Management Process, a methodology for content management on chatbot systems. The proposed methodology is based on the experiences acquired with the development of Evatalk, the chatbot for the Brazilian Virtual School of Government. The focus of this methodology is to evolve the chatbot content through the analysis of user interactions, allowing a cyclic and humansupervised process. We divided the proposed methodology into three distinct phases, namely, manage, build, and analyze. Moreover, the proposed methodology presents a clear definition of the roles of the chatbot team. We validate the proposed methodology along with the creation of the Evatalk chatbot, whose amount of interactions was of 22,771 for the 1,698,957 enrolled attendees in the Brazillian Virtual School of Government in 2020. The application of the methodology on Evatalk's chatbot brought positive results: we reduced the chatbot's human hand-off rate from 44.43% to 30.16%, the chatbot's knowledge base examples increased by 160% whilst maintaining a high percentage of confidence in its responses and keeping the user satisfaction collected in conversations stable.

KEYWORDS: Chatbot, virtual assistant, content management, conversation-driven development, human-supervised learning.

I. INTRODUCTION

Chatbots are gaining more space in customer service since they reduce costs and speed up the whole customer support process. Furthermore, organizations can take advantage of the data collected through chatbot conversations to understand their customers, know their interests and their opinions about the offered services. The first chatbot made was ELIZA between 1964 and 1966 and the following years had improvements in the chatbot development techniques. Although some state-of-the art chatbot algorithms emerged in those years, the hardware necessary for running them in a feasible time was not accessible or existent. Therefore, most of the chatbot developments were limited to academic and research purposes. Since the 1990s, chatbots have been gaining space in the market and after the 2000s, especially after 2016, there was an even faster growth of interest on the subject. This growth, consequently, brought new challenges such as how to design conversations and manage chatbot content. Concerning chatbot design, scalability and usability can be major issues since they have a direct impact on the user experience of a chatbot. Scalability refers to the way a chatbot design handles the increase of users, interactions, and content contained in the chatbot, and usability refers to the actual usability of a chatbot design and if users are able to perform the desired tasks. Chatbot designers need knowledge about users' behavior before scalability and usability start to improve. One way to provide great customer service using a chatbot is to acquire knowledge from conversations and evolve through content management. Chatbot content management is a challenge that includes a plethora of tasks that range from technological tasks (implementation, configuration), to data analysis, and content management. Chatbot content management requires a team with specific skills to deal with the chatbot big data. The incoming data needs to be transformed into new knowledge. This impacts customer satisfaction and the capacity of the chatbot to solve problems without human hand-off. This proposes an approach to content management for textual chatbots supervised by humans. The method was validated by creating and maintaining the Evatalk chatbot, which had 22,771 interactions from May to December 2020. This Report is organized as follows: chatbot design and methods; a chatbot content management process called CMP is proposed; the results achieved through CMP's application in the Evatalk project are discussed; and this work is concluded.

II. PROPOSED METHOD

The proposed system is a conversation-driven approach for chatbot management. This approach focuses on using conversational data to improve chatbot performance, rather than relying solely on pre-defined rules and scripts. By analyzing conversational data, chatbot managers can identify areas where the chatbot is struggling to understand or respond to user queries, and use this information to optimize the chatbot's performance. The proposed system aims to create a more natural and engaging chatbot experience for users, improve chatbot efficiency and effectiveness, and help businesses to identify new opportunities for engaging with customers and providing value-added services. This work proposes a methodology for chatbots content management. The Chatbot Management Process (CMP) is shown on Fig. 1 and contains six steps, divided into three phases. CMP is a cyclic process, adaptable to the organizational needs, and it is based on real users' conversations,
which is the driving force of CMP.

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IoT-Enabled Real-Time Health Monitoring System Using Deep Learning

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ABSTRACT: Smart healthcare monitoring systems are experiencing widespread growth thanks to the availability of Internet of Things (IoT)-enabled portable medical devices. The combination of IoT and deep learning in the healthcare industry is transforming healthcare from traditional face-to-face consultations to telemedicine, effectively preventing diseases. Real-time monitoring of physiological indicators is crucial for safeguarding the lives of athletes during training and competitions, particularly in the face of severe conditions and injuries. To address this, we present a real-time health monitoring system based on deep learning and IoT. Our system utilizes wearable medical devices to measure vital signs and employs various deep learning algorithms to extract valuable information. To demonstrate the effectiveness of our approach, we conduct a case study focusing on Sanda athletes. By leveraging deep learning algorithms, physicians can accurately analyze the athletes' conditions and prescribe appropriate medications, even when they are physically absent. The proposed system's performance is extensively evaluated using cross-validation tests, considering a range of statistical-based performance metrics. It is considered a valuable tool for diagnosing serious diseases among athletes, such as brain tumors, heart disease, and cancer. The performance of the proposed system is assessed based on precision, recall, area under the curve (AUC), and F1 score.

I. INTRODUCTION

Health holds a paramount position in human life, representing a state of well-being devoid of illness and encompassing both physical and mental conditions. Across societies, there is a growing focus on health and healthcare systems, with an increasing adoption of technology. The COVID-19 pandemic has particularly highlighted the need for smart healthcare systems, as it severely impacted global economies. These systems enable remote monitoring of individuals to curb the spread of diseases and provide prompt and cost-effective treatment. The integration of Internet of Things (IoT)-enabled healthcare systems and machine learning is considered an ideal solution in this context, leveraging advancements in sensing, processing, spectrum utilization, and machine intelligence.

Healthcare systems categorize IoT and machine learning-based solutions into symptomatic treatment and preventive treatment, as there is a significant emphasis on disease prevention, early detection, and appropriate medication for chronic conditions. The use of IoT devices and machine learning algorithms for remote monitoring has gained substantial attention in the field of telemedicine. There is a strong demand for the development of real-time healthcare systems that are energy-efficient, cost-effective, and scalable in order to effectively manage individuals' health. Traditional wireless communication technologies used in healthcare systems suffer from radiation and high costs, while real-time health monitoring systems offer radiation-free alternatives with flexible communication modes suitable for various environments.

Machine learning and deep learning algorithms are commonly employed in IoT-enabled healthcare systems, as well as in sports for monitoring the health of athletes. These algorithms are utilized for tasks such as image interpretation, medical image analysis, injury prediction, and athlete diagnosis. In sports, connected footwear and clothing integrated with sensors play a vital role in intelligently tracking athletes' performance, including their pace, footwork, respiration rate, heart rate, and muscle usage. These implanted sensors offer significant advantages in maintaining athletes' health by ensuring a balanced exercise regimen.

In this research project, a medical device has been developed to measure six different health parameters (body temperature, sphygmomanometer, heartbeat, pulse oximeter, glucometer, and ECG) using a single device. A mobile application connected to a server enables remote monitoring. The primary goal of this research is to monitor as many health parameters as possible in real-time using a single device, ultimately improving the performance and accuracy of previously invented devices. IoT-based real-time health monitoring systems have been designed to accurately monitor the health of device users.

A Study on Partial Replacement of Cement by Zeolite and Silica Fume in Concrete

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***Abstract*:- Releasing of greenhouse gas results in global warming. In which cement production plants are also blamable for some quantity of carbon dioxide emission. Hence it is necessary to minimize the amount of carbon dioxide emission from cement production plants. So zeolite 4a powder and silica fume substituting for cement, investigation is carried out. Zeolite has the property of absorbing carbon dioxide up to certain percentage and silica fume used to keep the strength of the concrete. In this study grade of concrete used is M30 and cement is substituted by 5%, 15%, 25% of zeolite and silica fume combination. Concrete is checked for its carbon dioxide absorbing capacity, workability parameters and strength parameters**.

1. INTRODUCTION

Cement is producing by heating clay, limestone, silica, at high temperatures at (around 1500℃) of which limestone is the cause for CO_2 emission, resulting from decomposition of calcium carbonate. More than 50% carbon dioxide emissions in construction sector come from cement production only. Depending on the technique nearly 0.73 to 0.99 tons of CO_2 is released per 1 ton of cement. The manufacture of Portland cement was patented nearly for about 200 years ago, since then it hasn't seen much difference in the process which makes it a challenge in climate change action. In this study grade of concrete used is M30 and cement is substituted by 5%, 15%, 25%, of zeolite, silica fume combination. Concrete is checked for its strength parameters and carbon dioxide absorbing capacity as well as its workability.

2. LITERATURE REVIEW

Akshatha K. B. (2018), Studied about Concrete using Silica Fume and concluded that compressive strength of concrete gets enhanced with the use of silica fume and the split tensile strength and flexural strength is also found with similar variation when silica fume was used. There is no particular trend of variation in modulus of elasticity of normal and silica fume concrete.

Mr. Mengal G A et al. (2018), Studied on carbon dioxide absorbing concrete roads and stated that the zeolite made concrete is capable of absorbing CO2 without any emission of it. General concrete evolves huge amount of CO2 into the atmosphere. The zeolite of bottle of size 10 cm diameter and 12 cm height has ability to absorb around 1 to 14 moles of CO2 in 5 days.

P. Ramu et al. (2017), Study on Replacement of Fine Aggregate and Cement by Zeolite Sand & Zeolite Powder by 30% & 10% and concluded that at 28 days the compressive strength is found to be 6% more and the split tensile strength is 10% more than conventional concrete.

Syed Eashan Adil et al. (2017), study on carbon dioxide absorbing concrete blocks and observed that zeolite powder-based concretes have achieved a high strength for replacement of zeolite powder for 28 days when compared to conventional concrete and there is no effect on strength of block prepared by zeolite sand and powder as a substitute. The zeolite block can be used in the road pavements, Chimney of factory as well as at the faces of building.

S. Subash et al. (2016), Replacement of cement by 10% & 30% of zeolite for the absorption of carbon dioxide by M30 concrete and found the similar compressive strength.

Balraj More et al. (2014), Even a block of size of 10x10x10 cm made of zeolite mix, has the ability to absorb 1 mole of carbon dioxide in 50 days. And the property of zeolite doesn't lose the durability and strength.

T. Subramani et al. (2016) have studied about partial replacement of cement by 25% of zeolite for the absorption of carbon dioxide by M30 concrete. He stated that addition of zeolite up to 25% improves the strength properties of concrete.

Balraj More et al. (2014) have studied about carbon di oxide absorbing concrete blocks and observed there is a reduction in pollution. In this experiment they have used a block of size 10x10x10 cm, which has the ability to absorb 1 mole of carbon di oxide in 50 days. And the property of zeolite doesn't lose the strength and durability and This type of blocks is affordable and hence can be used general purpose and it will be eco-friendly.

3. OBJECTIVES

The main objective of this project is to know the behaviors of concrete with partial replacement of cement from silica fume and zeolite at different proportions of replacement in M30 grade concrete and to study the effect of different replacement levels of silica fume and zeolite on the strength development of masonry mortar, concrete and to obtain the optimum replacement level of silica fume and zeolite based on strength requirements. The objectives of study include,

Experimental Investigation on Light Weight Concrete using EPS

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***Abstract*—Concrete is the most consumed material on this earth next only to water. It is very difficult to imagine any civil engineering structure without the use of concrete and reinforcement. The weight of concrete material is one of the major concerns in design of high rise. Very few carried out study on predicting the properties of light weight concrete from the knowledge of its mixture proportions. In this project, EPS beads replaced with coarse aggregate in 0, 0.25, 0.5, 0.75 and 1% and aluminum powder is replaced with cement 0, 0.25, 0.5, 0.75 and 1%. Mechanical properties like compressive strength, Split Tensile strength is studied. The study shows slight decrease in strength compared to conventional concrete but weight of the concrete member decreased. Hence, it can be used in the light weight concrete, infill walls, non-load bearing walls and also it is cost**

Keywords—Light weight concrete; EPS Beads;, aluminum powder; concrete; compressive strength; foam concret

I. INTRODUCTION

In construction project the main use of lightweight cement block is to reduce the dead load of block structures resulting in reduction in the size of columns, beams, foundations and other load bearing elements. Cellular (aerated) cement block is a lightweight material composed of cementations mortar surrounding disconnected bubbles which are a result of either physical or chemical processes during which either air is introduced into the mortar mixture or gas is formed within it. Although aerated cement block is known as an insulation material, its structural features are also of considerable interest. Indeed, the future need for construction materials which are light, durable, economic and environmentally sustainable has been identified by many groups around the world. With the possibility of producing a wide range of densities (400- 1800) kg/m3. Light concrete is a special concrete which weighs lighter than conventional concrete. Expanded polystyrene beads(EPS) is a rigid, closed cell, thermoplastic foam material. Light weight concrete is a mixture of cement, fine sand, water and special foam which once hardened results in a strong and lightweight concrete. Light weight concrete is both fire and water resistant.It possesses high (impact and air-borne) sound and thermal insulation properties.

II. OBJECTIVES

- First, To determine the compressive strength and split tensile strength of the light weight concrete.
- To determine the mechanical properties of light weight concrete using A.p= 0%, 0.25%, 0.5%, 0.75% and 1%.
- To determine the mechanical properties of light weight concrete using EPS beads =0.25%.

III. MATERILAS AND METHODOLOGY

A. Materials

1. Cement
2. Fine Aggregate
3. Aluminum powder
4. Water
5. EPS Beads

1. Cement: Among many brands of cement available at Bengaluru, one which is more popular, the Ultra Tech cement of 53 grades OPC has been used in the study.
2. Fine aggregate: The locally available natural river sand is procured and is found to be conformed to grading zone-II of Table of IS 383- 1970. Various tests have been carried out as per the procedure given in IS 383(1970) from them it is found that.
   - Specific Gravity of fine aggregate is 2.66
   - Fully compacted density of fine aggregate is 1670 kg/m3
   - Partially compacted density of fine aggregate is 1500 kg/m3
   - Fineness Modulus of Fine Aggregate is 3.2
3. Aluminum powder: properties
   - Molecular Formula:
   - Al Form: Powder Color: Silver
   - Melting point: 6600C (12200F)
   - Boiling point: 24670C (44730F)
   - Density: 2.7g/ml at 250C (770F)
   - Ignition Temperature: 7600C(14000F)
   - Auto Ignition Temperature: Catches fire spontaneously if exposed to air. Oder: Odorless
4. Water: Water that is potable is generally fine for use in the mix.
5. EPS Beads: Expanded Polystyrene. Expandable polystyrene eps foam beads (Expandable Poly Styrene) is a lightweight, rigid, plastic foam insulation material produced from solid particles of polystyrene. The gas expands under the action of heat, applied as steam, to form perfectly closed cells of EPS. EPS has a reduced thermal conductivity, with a density of about 28-45kg/m3. It therefore acts as an insulator keeping products cold or warm depending on the application.

Parametric Study on Strength of Light Weight Concrete by using EPS Beads and Bagasse Ash

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Abstract **- Lightweight concretes (LWCs) can be used in various construction fields. It can be used for repairing wooden floors of old buildings, carrying walls of low thermal conduction, bridge decks, floating quay, etc. The present study is aimed at utilizing sugarcane bagasse ash and EPS beads as a partial replacement of cement and coarse aggregate in concrete and its strength was checked. The concrete mix is designed for M 30 grade as per IS 10262:2009. The replacement of EPS beads is done at various percentages like 0%, 10%, 20%, 30% and 40% by volume and the percentage replacement of bagasse ash was kept constant at 10% by weight of cement. concrete mix demands chemical admixture in order to attain the desired slump. At room temperature the compressive strength decreases with increase in percentage replacement and was found that 10% replacement of bagasse ash and 10 percent replacement of EPS beads is optimum replacement in concrete which gives desired strength.**

Keywords **- *Sugarcane Bagasse Ash(SCBA), EPS Beads, Blended concrete, Compressive strength***

1.INTRODUCTION

Ordinary Portland cement is a controlled blend of calcium silicates, aluminates and ferrate, which is ground to a fine powder with gypsum and other materials. Ordinary Portland cement is the conventional building material that actually is responsible for about 5% - 8% of global CO2 emissions. This is the environmental problem will most likely be increased due to exponential demand of ordinary Portland cement. Concrete is most widely used and very necessary material which is used in all types of construction works. Concrete consists of cement, aggregates, water and admixtures. Concrete uses is over 10 billion tons per year, concrete can present good mechanical strength, and also acceptable durability performance. Out of concern for the environment, and in support of sustainable development, cement industries are improving their production through a range of pozzolonic material and it can alternatives such as the use of alternative fuels or increasing the production of blended cements. All these aspects have been contributing to reduce CO2 emissions, which can reach up to 30% of diminishing according to the Danish Centre for Green Concrete.

Researchers all over the world are focusing on ways of utilizing industrial or agricultural waste, as a source of raw materials for industry. Industrial wastes, such as blast furnace slag, fly ash and silica fumes are being used as supplementary cement replacement materials. Sugarcane cane is one of the major crops grown in over 110 countries and its total production is over 1500 million tons. In India only, sugarcane production is over 300 million tons/year that cause about 10 million tons of sugarcane bagasse as has an un-utilized and waste material.

2.OBJECTIVES:

Objectives of the study:

The present study aims at mix design of M30 grade of concrete and to find the required constitutes of it.

a) The general objectives of this research work is to make use of sugarcane industries waste products and APS beads to study the feasibility of using this material as a cement and coarse aggregate replacement material.
b) Compressive strength and split tensile tests are carried out in order to know the performance of bagasse ash and EPS beads of blended concrete subjected to various exposure conditions.
c) The attempt has been made to utilize the industrial waste of bagasse ash used as supplementary cement replacement materials.

3. MATERIALS AND METHODS

3.1 Cement

Ordinary Portland cement (OPC) confirming to IS 12269 was used for the experimental work. Laboratory tests were conducted on cement to determine specific gravity, fineness, standard consistency, initial setting time, final setting time and compressive strength. Cement is a binder, a material utilized in construction that sets and solidifies and can bind different materials together. The most significant kind of cement is utilized as a part in the production of0mortar in brick work, and of concrete which is a mixture of0cement and an aggregate to form a strong structure material. The physical properties of cement are given below.

Table-1: Physical properties of Cement

Sl. No	Test Performed	Values Obtained	Requirements as per IS269:2015	Test code
1	Specific Gravity	3.12	3 to 4	IS4031
2	Normal Consistenc y	32%		IS4031 (part 4)1998
3	Setting Time			IS4031 (part 5)1998
	Initial Setting Time	35 mins	>30mins	
	Final Setting Time	335mins	<600mins	
4	Fineness	5%	<10%	IS4031

Planning and Scheduling of College Building by using Primavera P6

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Abstract **- For Successful Completion of Project, Planning and Scheduling are two most important factors. Due to the increase in Workloads and Shrinking resources Construction Work Department Found New Technology Which helps to Manage the Project easily. With the help of Primavera P6 Software proper planning and scheduling can be done. Prima vera can easily compare between the planned progress of construction work and actual progress of construction project. In this study, G+5 college Building Plan is drafted in AutoCAD and estimate the building material quantity and scheduling and controlling the project by primavera p6.**

Keywords - Planning, Scheduling, Primavera p6

1. IINTRODUCTION

A project is composed of jobs, activities, functions or tasks that are related one to the other in some manner, and all of these should be completed in one order to complete the project. Project management involves three phases: project planning, project scheduling, project controlling. For the completion of project to basic things are material resources and manpower resources. The basic element of project network is event and activity. The commencement or completion of an activity is called an event. An activity is the actual performance of the task. Oracle primavera p6 is also known as EPPM which is abbreviated as enterprise project portfolio management. It is also the most powerful strong and easy handling software and used solution for worldwide, Organizing, planning, managing, and execute project, programs and portfolios. Primavera P6 software helps to achieve the maximum return on investments in project and progress. Primavera P6 gives a single solution for multi projects of any size. Primavera can handle the projects of large size according the persons need.

2. LITERATURE REVIEW:

[1]"Planning, Analysis & Construction Controlling of G+5 Building by Using Primavera."

The main objective of this project is to analyses and to construction scheduling of an apartment building (G+5) using STAAD Pro and Primavera P6 software. First of all, the planning is done using Auto CAD and code refered for this project is IS 456-2000. The first and foremost thing which we can get by effectively planning in primavera is start date on 01 July 2019 and finishing date of 27 Dec 2022 project. Primavera P6 helps in effectively scheduling the project by assigning two relationships at a time to each activity and considerably reduces the float. All the important steps like creating an EPS, creating a WBS, linking of activities according to their interdependence and availability of resources and determination of critical path are clearly exhibited in this report. Budgeted cost, time, and materials of the project are obtained by resource allocation.

[2] "Project Management of in Construction using primavera" (August 2017)

For the successful completion of a project, planning and scheduling are two most important factors. The demand of construction industry requires a precise planning, scheduling and management which can allow the overall optimization of the cost, time and resources. Due to the increase in workloads and shrinking resources public work department found new technology which helps to manage the project easily. Project management software is used as a tool for managing and organizing work which helps industries to grow in a rapid manner. There are so many computers software are available in market now a days which is such as MSP, Primavera p6, etc..for doing project management. With the help for this software proper planning and controlling of project can be done. Primavera can easily compare between the planned progresses of construction work and actual progress of Construction project. Project management software Primavera P6, include collecting, recording, monitoring, controlling and reporting information concerning project perform.

[3] "Planning and Scheduling of High-Rise Building Using Primavera" (June 2014)

Although the long-introduced Industrialized Building System (IBS) has promised to solve and improve the current construction method and scenario in our country, but the IBS method has not gained enough popularity. One of the reasons is due to lack of research works done to quantifying the benefit of IBS especially in construction time saving. In lieu with such scenario, this study conducted to quantify evidence of time saving in IBS application. The methodology adopted for this study is by modelling the construction process for high-rise residential building for both conventional and IBS with shared more a less the same nature and size of the structure. The model was developed using Primavera(P3) project planning software. The comparison was made by comparing selective building components for both method of construction. Different high-rise residential projects have been selected for this study. The result of the study clearly indicated that sufficient time saving can be archived.

3. OBJECTIVE OF WORK

i. For planning and scheduling of the construction of

Optimization of Concrete Mix Proportion by Replacing Sand with The Hazardous Industrial Waste

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***Abstract*—Concrete is the material which gives the strength to the structures with more durability. Concrete is used in all types of structures because it can be fabricated and can be easily prepared. In the modern civilization, the construction of structure is rapidly increases which results the shortage of construction materials (sand). Various percentages of fly ash, sequentially 0%, 10%, 20%, 30%, 40% and 50% were implemented in the mixes based on partial weight replacement of its components and the water-binder ratios were calculated based pozzolanic cementing efficiency method. Tests on concrete after replacement are quite good such as Compressive Strength, Split Tensile Strength, and Flexural Strength. After test we found that, 30% sand can be replace by Fly ash. However, a new technique for the complete replacement of the fine aggregate was introduced which incorporates the polymerization technique in the byproducts (Fly Ash).**

Keywords: Fly ash, Sand, Admixture (Super plasticizer SP430) and Pozzolanic Efficiency Cement.

I. INTRODUCTION

Concrete, Being the second highest material used in the structure after the water across the world. Fine aggregate is used as binding material in concrete is in high demand as the current period. So, the sand (fine aggregate) is used from a decade which is extracted from riverbed. Thus, this is called as river sand. Now days there is shortage of the river sand due to overuse and increasing the price of sand. To solve this shortage problem engineers are trying to find and alternative of river sand. i.e., M-Sand and Fly ash. M-sand is in practice now on the construction of structure.

In the modern era, electricity is required to live a life. To generate the electricity Thermal Power Plant is used which generates the huge amount of fly ash. In India only huge amount of fly ash is generated (80 million ton per year). Fly ash also can be used as fine aggregate in certain amount (30%). Which can also reduce the price of construction. Fly ash is generally used as replacement of cement, as an admixture in concrete and in manufacturing of cement. Concrete containing fly ash as partial replacement of cement poses problems of delayed early strength development. All the previous studies have reported effect of sand replacement by fly ash on concrete and mortar with Ordinary Portland Cement. As Government of India is encouraging the use of Portland Pozzolana Cement, PPC is used in the present study. Concrete containing fly ash as partial replacement of fine aggregate will have no delayed early strength development, but rather will enhance its strength on long-term basis.

II. LITERATURE REVIEW

Study on Partial replacement of Sand with fly ash in Concrete Mixes Based on Pozzolanic Cement to the strength Weight and cost Strength Ratio". By using the fly ash as the sand in the concrete reduces the cost of the concrete. Fly ash is the alternative solution for the depletion of sand resources in the region like Bangalore. This study shows the effects of sand partial replacement with fly ash without decreasing the strength of the concrete. The strength weight ratio was used for mechanical evaluation with higher value considered as better, in cost strength ratio indicates its economic efficiency with lower value mean more efficient. Fly ash is partially replaced for sand at 0%, 10%, 20%, 30%, 40%, and 50%. The effect of thermal power plant wastes on compressive strength is studies by using specimens' size 150 X 150 X 150 mm cubes. After 28 days of curing, the specimens are dried and tested. The result is compared with normal concrete with same water cement ratio. By seeing this context fly ash can be much more effective material used as replacement in concrete as fine aggregate along with cement combination is summarized in this study.

III. OBJECTIVE OF WORK

i. Natural sand is replaced by fly ash in different percentage such as 0%, 10%, 20%, 30%, 40% and 50%.
ii. To study the workability in terms of slumps for all mixes.
iii. To study the effect of superplasticizers in all the mixes.
iv. To study near surface characteristics water absorption and soroptivity for all mixes.
v. Strength characteristics such as compressive strength, split tension strength and flexural strength, are found when natural sand is replaced by fly ash.
vi. To find the optimum content of fly ash that can be replaced in natural sand.

Dynamic Behavior of High Rise RC Building with A Vertical Irregularities

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***Abstract*— Earthquake damages are caused due to deficiency in few aspects such as, the building with irregularities, soft storey, insufficient lateral strength, structural behavior between the building and the ground. In Modern Urban Infrastructure, irregular structure constitutes a larger portion. Also, it is the major characteristics which affect the structure during earthquake. Irregular Structures are those which have discontinuity in geometry, distribution of mass, stiffness. This project deals with an analytical study of a Stiffness irregularity i.e., soft storey behavior of a simple high-rise building under the dynamic loads. The analysis is carried out with response spectrum. Tall building is considered having stiffness irregularity, i.e., making different floors as a soft storey and masonry wall is used for stiffening the other floors. The main parameters are focused on time period, storey drifts, storey displacement, storey stiffness. The bare frame possesses high displacement and the risk of deflection during earthquake is high. Hence providing the lateral load resisting unit is important to minimize the risk of failure. Infill walls with openings have weak performance compared to the walls without openings. Anyhow, some portion of openings can be provided which will be less effective to earthquake forces. Since stiffness is directly proportional to the modulus of elasticity of the infill walls, material property and quality of this infill will vary the seismic responses of the structure. Displacement resistance and controlling the drift can be achieved by the addition of infill walls in turn, improves the stiffness of the structure.**

Keywords—Tall building, Soft Storey, Storey drift, Storey Displacement etc.

I. INTRODUCTION

Due An Earthquake is the most natural disaster in which shaking of the earth's surface takes place. Ground rupture and ground shaking are the most vulnerable effects creates by earthquakes, resulting in less or more severe destruction to building and other rigid infrastructure. Though many studies and experiments are done about earthquake, it is difficult to avoid the structure undergoing damage or failure during this distinctive shaking. Earthquake damages is caused due to deficiency in few aspects such as, the building with irregularities, soft storey, insufficient lateral strength, structural behavior between the building and the ground (type of foundation used).

IRREGULAR STRUCTURES

In Modern Urban Infrastructure, irregular structure constitutes a larger portion. Also, it is the major characteristics which affect the structure during earthquake. Irregular Structures are those which have discontinuity in geometry, distribution of mass, stiffness. As per IS Code 1893 (Part 1):2002, irregularities are classified as Plan Irregularities and Vertical Irregularities.

Soft storey is one of the reasons for the failure of the structure during earth shaking. It is also the Stiffness defect which comes under vertical Irregularities. The recent trend is to construct the high rise building with an open ground floor which is used as a parking area or for any other utilities. These structures are usually designed as framed structure, having a masonry wall at the upper floors. This wall makes the upper floors to be stiffer against the lateral loads in compared to ground floor and the building is performed as a soft storey. According to IS 1893:2002 (part 1), Soft storey is in which the lateral stiffness will be less than 70% of the stiffness in the above storey or it will be less than 80% of the average lateral stiffness of other above 3 story's.

The code suggests following considerations for a building with soft storey. (Page 27)

➢ Special arrangements are done to make the lateral strength and stiffness of the soft storey more.

➢ Members are designed according to the analysis carried out, i.e., dynamic analysis.

➢ after the analysis is over, the beams and columns should be designed to satisfy more than 2.5 times of the obtained moments and shear.

➢ Apart from the above column design, shear wall should be placed symmetrically on both sides of the building.

➢ These walls to be designed for 1.5 times the lateral storey shear force.

II. OBJECTIVES

This paper deals with an analytical study of a Stiffness irregularity *of the building structure i.e.* soft storey behavior of a simple high-rise building under the dynamic loads. Tall building is considered having stiffness irregularity, i.e., making different floors as a soft storey and masonry wall is used for stiffening the other floors. The building will be modeled and designed using ETAB V18 software and dynamic analysis are carried out.

The main parameters are focused on time period, storey drifts, storey displacement, and storey stiffness.

III. ANALYSIS AND PROBLEM DESCRIPTION

An RCC building of 50mX30m is considered having a special moment resisting frame of 35 storeys. ETABS V15.2 is the software used for analyzing the frame. Inputs are mentioned below.

Seismic Analysis of Multi-Storey RCC Building with and without Viscous Dampers

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Abstract **- Earthquake is the most important aspect to be considered in designing any building. During earthquake most structures are subjected to vibration. The vibrations may arise from wind forces, earthquake excitation, machine vibrations, or many other sources. In some cases, especially under strong earthquake excitations, these vibrations can cause structural damage or even structural collapse. By using dampers severe damages can be prevented. The concept of the viscous damper is to absorb the shocks and vibrations from the structure. However, the most important is the location of dampers which is the major consideration. Viscous damper is considered as the passive control systems used to dissipate and absorb energy induced during the earthquakes due to earthquake. The main purpose of application of dampers is to enhance the stiffness and stability of the structure and make the structure earthquake resistant. The present study is focused on the study of seismic behavior of building with the dampers and to evaluate seismic responses such as displacement, Storey drift and modal parameters. Three buildings (G+5), (G+10), (G+15) are analyzed by Dynamic Non-linear (Time-History method) using Cheerapunji earthquake acceleration data.**

Keywords - ***Viscous dampers, Storey response***

IINTRODUCTION

An earthquake is a powerful shaking of the earth's surface that can be fatal to thousands of people and cause serious damage. They are brought on by the unexpected release of energy from tectonic plate movements in the Earth's crust. Seismic waves are the means by which this power is discharged. The most severe and unanticipated natural calamities are earthquakes. In the worst situation, the large amount of energy produced during an earthquake may result in serious injury or the destruction of important structures. Civil constructions like high-rise buildings, skyscrapers, and long span bridges are designed with more flexibility as a result of the rapid economic development and modern technology, which increases their susceptibility to external excitation. Therefore, these flexible structures are susceptible to being exposed to extremely high levels of vibration in the event of a strong wind or earthquake. In order to keep such civil projects from suffering significant damage, the response reduction of civil structures during dynamic loads such large earthquakes and high winds has become a vital topic in structural engineering. The forces induced during the earthquakes should be resisted by the structures without suffering any major structural damage. All structures have to be designed to resist lateral loads in several ways. The most common lateral loads resisting systems are moment frames, shear wall and braced frame. Passive energy dissipating systems are also used as an alternative to seismic isolation which protects the structures against the earthquakes. The application of such systems enhances the energy absorbing capacity of structures. The most common types of these systems include fluid viscous dampers, friction dampers, tuned mass dampers and metallic dampers.in the present study one of the passive energy dissipating devices is used and the seismic behaviour of the building is studied.

A. *VISCOUS DAMPERS*

Viscous dampers, also referred to as seismic dampers, are hydraulic components that diffuse kinetic energy induced during earthquakes and soften structural collisions. They are adaptable devices that can be made to provide for both controlled and uncontrolled dampening of structures to shield them from earthquake.

Fig: 01 Viscous dampers

B. *Scope & Objectives:*

Scope of the study:

a) To perform the seismic analysis of multi storey RCC building with and without viscous dampers.

Objectives of the study:

a) To study the Seismic behavior of building with and without dampers.

b) To evaluate seismic responses such as Displacement, Storey drift and modal Parameters.

c) To study the performance of building incorporated with dampers.

d) To limit the parameters evaluated under permissible limits as per IS Provisions.

II. METHODOLOGY

a) To carry out the proposed work 3 building models are considered (G+5, G+10 & G+15).

b) The analysis is carried out considering the column supports fixed.

"Flexible Pavement Design for a sub urban locality in Bengaluru India"

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***Abstract*— Flexible pavement consists of 4 different layers as each has different functions. It is necessary to design appropriate thickness of individual layers in order to withstand traffic wheel load in its service life. In this study, the stretch of 1 km road is selected, which connects to Jalahalli to Chikkabanavara railway station. Chikabanavara is a fast-developing locality in Bengaluru. Different layers of flexible pavement are designed by IRC-37-(2018) method and Asphalt paving association of lowa method. From the properties of the soil sample, the collected soil is found to be a course grain well graded sand. It is suitable for construction of the flexible pavements as a subgrade soil. As per the study of the soil sample the average CBR value is 10 % and according to CBR value and Traffic data the thickness is provided.**

Keywords—Flexible pavement; IRC-37: 2018; CBR, Traffic volume studies

I. INTRODUCTION

Pavement is the hard surface which is covered by concrete and asphalt. Pavement is the durable surface material laid on the road to sustain the vehicle or foot traffic such as walk way or footpath. In previous days road was constructed by granite but nowadays asphalt and concrete are used for road construction. It is used for transportation of vehicles from one place to another and movement of people. If pavement is not provided then transportation cost is high. Hence pavements are required. Roadways provide infrastructure facilities and enhance communication between communities all over the country. Since there is a demand for the use of roadways, it is necessaryto Construct the road as per IRC guidelines. The present condition of the pavement was assessed and it was found to be in very poor condition. For economical and efficient construction of highways, correct design for the thickness of pavement for different conditions of traffic and subgrade is essential. In previous days the road was designed simply without skilled persons, but, currently, all the parameter of road components is designed under technical expertise.

II. LITERATURE REVIEW

Pransul sahu and R. Vinod Kumar have done the experimental study of soil**.** As per the study they found that the soil sample is sandy clay -sandy silts soil which is not suitable for the road construction works, hence the study recommended the admixture of 10% fly ash is added to increase the stability soil. Hhigher the CBR value, lesser the pavement thickness. The studies conclude with the thickness of pavement varies with values of CBR of subgrade soil. [9], [10].

Devendra Kumar Chaudhary & Y. P joshi: The different types of soil samples were collected to ddetermine the properties of soils. Soils test such as maximum dry density(MDD), optimum moisture contents (OMC), Liquid limit, plastic limit & plasticity index, CBR value of soil sample for design the thickness of the flexible pavement structures. As per their study the percentage of gravel present in the soil sample is 3.2 % and final conclusion found that the thickness of crust varies with change value of CBR, with higher value of CBR the crust thickness is less and vice versa. [11]

S. Venkat charyulu and G.k Viswanath conducted the studies, to design the flexible pavements including cross drainage works of the village roads near suburb. They followed the standard specification of IRC-73,1980 as per this recommended lane width is 3.5m for single lane and 7 meters for double lane but the California states highways standards allows for 3.6 m wide lanes for single and 7.5 m for double lanes. As per their studied the thickness of pavement should be sufficient for distributing the stress of wheel on sub grade soil to a safe value. Study recommended they have design thickness of each layers are-Sub grade-500 mm, GSB -250 mm, WMM-250mm, DBM-75 mm, BC-45 mm [8]

III. OBJECTIVES OF STUDY

1. To select suitable stretch for study.
2. To collect soil samples from selected stretch.
3. To determine the characteristics of subgrade soil in the area.
4. To find out the strength of subgrade soil in the area.
5. To design thickness of the flexible pavement for a developing suburban area in Chikkabanavara Railway station, Bengaluru, which is has prominent educational institutes and hospitals, as it also connects industrial area and nearby railway station. many heavy trucks and equipment's visit for construction work.

IV. MATERIALS & METHODOLOGY

1. Selection of suitable stretch for a study in a fast-developing suburban locality with traffic volume of heavy trucks which is connected to Jalahally to chikkabanavara. There are so many unpaved roads are provided so selected this road stretch for design the thickness of the flexible

Artificial Intelligence for Road Safety Management:in the 21st Century

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***Abstract*—Till now many measures have been introduced to reduce road traffic accidents, but still millions of deaths occurring yearly. New methods are introduced such as Artificial intelligence (AI) application in vehicles can play an important role. To study AI's potential for road safety three applications, namely obstacle, traffic sign and cut-in detection are studied the Model. The AI behind these applications are presented to highlight how they could circumvent potential road danger. In particular the application of convolution neural networks for image analysis is studied in- depth. The shortcomings of AI are highlighted in t Autopilot crash, and simulation as an alternative to real-data collection is discussed. The essay concludes that AI will inevitably improve with developments in computing power and hardware, unsupervised learning and pattern recognition. Nevertheless, for enhanced road safety, humans need to stay alert on the road and appreciate AI as complementary support.**

***Index Terms*—Machine learning Artificial intelligence (AI) road safety**

I. INTRODUCTION

As per record , approximately 1.35 million people die due to road traffic accidents every year and about 20-50 million non-fatal injuries (WHO, 2020). All most nearly 90% of road accidents are related to human error, such as not in attention, over speeding, and improper lookout, use of GSM, eating/drinking, fatigue etc. Today many safety measures are taken in place to reduce the rate and impact of accidents, such as airbag, seatbelt, rollover protection and speeding regulations, speed regulators etc, But , one measure that could increasingly play a life-saving role, is artificial intelligence (AI) and deep learning found in autonomous vehicles.

There are 5 stages of automation At stage 5, vehicles are fully autonomous, whereas in stage 3-4 vehicles can travel fully-autonomously but require intervention in exceptional circumstances. This paper however, studies AI applications in driver-assisted and semi-autonomous cars (stage-1-2) since further autonomy stages are currently not permitted in mass- produced vehicles AI can enhance road safety and potentially safe lives in common vehicles and real-life-scenarios. The essay provides a literature review and showcases concrete examples, namely, obstacle, traffic sign, and cut-in detection. Then challenges of implementation are discussed. Lastly, the essay concludes with future directions for this topic.

Figure 1. Animal Crossing Sign Board

II. APPLICATIONS OF AI IN VEHICLES

AI is used for collision avoidance through obstacle de- tection, which can circumvent potential accidents caused by human error. The data is collected from its 8 cameras, and 12 sensors (Tesla, 2020). Unlike most partially automated vehi- cles, Tesla does not use LIDAR, which refers to light detection and ranging, and is valuable due to its depth knowledge. Instead it relies on computer vision.

The human eye immediately recognises a cows on the street. A computer, however, sees million brightness numbers in a grid of all the pixels. When CNNs initially predict the object, the connection strengths between networks are vague, and the prediction will be random. Therefore, CNN training is relevant, and to reduce the error back propagation is applied, which is an algorithm in supervised learning that can adjust the weights and biases of neural networks.

For simplicity, refer figure 2 on the following page assume this represents a deep CNN tasked with identifying a cow. The inputs, labeled 'x' arrive via a pre-connected path as highlighted by stage 1. In stage 2, the input is modeled by weights in the hidden layer. Stage 3 represents a calculation of the output for all neurons entered by the input to the output. The 4th step calculates the difference between the actual value and the desired value. Step 5 represents back propagation, whereby weights are adjusted so that the error is decreased (ibid). This supervised learning method trains the CNN, and the likelihood of detecting the cow increases.

Another example, he fleet is asked to send data of vehicles going from a right-lane to centre-lane. Such

Integrated Spatial Assessment of Land and Water Resources in Watershed for Sustainable Growth

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***Abstract*—The watershed wise integrated planning of the area through spatial evaluation using different process models will result in generation of suitable action plans for diverse vegetative growth in the area leading to sustainable development. The development of micro- watersheds as a result of suggested treatment over a period of time can lead to positive changes in landscapes as indicated by multi- temporal satellite data and field visits. The diversity in the vegetation growth attributed to the integrated planning and suggestive action plans such as creation of infrastructures for conservation, drainage line treatment, people's participation and live stack improvement can result in improvement in diversification of crops as shown by values of saturation index, fragmentation, terrain complexity, biological richness and Simpson's index obtained from sample plots of the area. The details of the same are given in the paper**

Keywords—Sustainable development

INTRODUCTION

The integrated spatial assessment of land and water resources of watersheds involve integration of surface and ground resources of river basin with an objective of evaluating for water availability and demand from the watershed. This will facilitate planning for alternative farming system, reclamation of wasteland, and erosion control and land development in the area.

Thus, blending of remote sensing and GIS technologies has proved to be an efficient tool and have been successfully used by various investigators for water resources development and management projects as well as for watershed characterization and prioritization . Accordingly there is an expectation of productive transformation of treated micro watersheds in the area. The spatial assessments of micro watersheds will evaluate crop diversity of the area indicated by using different diversity indices utilized for diversity evaluation.

A few more studies are reported where remotely sensed data had been used for the assessment of soil degradation to devise cost effective methods for soil conservation . The integrated watershed management and the suggested line of treatment for the area will enable diverse growth in the area based upon the water availability.

Watershed development program is, therefore, considered as an effective tool for addressing many of these problems and recognized as potential engine for agriculture growth and development in fragile and marginal rain-fed areas .Management of natural resources at watershed scale produces multiple bene1ts in terms of increasing food production, improving livelihoods, protecting environment, addressing gender and equity issues along with biodiversity concerns .The water availability in the water shed can be computed as dependability yield for a specified risk percentage using the rainfall records of the area. This will facilitate capacity determination of water conservation structures and computation of the water demand can be computed by summing up different water uses in the area

STUDY AREA

The study area chosen for integrated spatial assessment covers different micro watersheds and lie between 73°44' 50" to 73°49' 1" longitudes and 18°30' to 18°33' 58" latitudes comprising of nine micro watersheds near Mulshi area of Pune district with a spread area equals 55.2 KM^2. The conservation measures for development of every micro watershed have been suggested and carried out in these micro watersheds having well distributed streams Fig 1 shows the study area, which constitute as a large watershed and divided into nine micro watersheds. The annual rainfall data was collected from 2005 to 2015 for the area to compute the dependability yield at risk percentage of 60%. The crop grown in the area has root zone depth varying from 20 to 50 cms and the soil bulk density is varying from 1.28 to 1.59 gram/c.c with field capacity of soil being 0.13 and evapotranspiration in summer and winter varying from 157 to 165 cms. The annual rainfall for the area varied from 460 mm to 1152 mm for the 11 years data collected and the water availability for the micro watersheds as dependability yield at 60% risk has been worked out to 842 mm excluding the different losses.

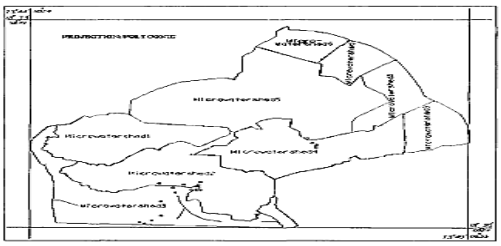

FIG-1: MICRO WATERSHEDS OF THE STUDY

III. METHODOLOGY

Spatial integrated Watershed Management carried out earlier in the area had suggested activities such as creation of infrastructure for water and soil conservation, conservation measures in arable and non arable lands, drainage line treatment, line stock development and people's participation. The development activities were carried out over a period of 5 years in between 2014 to 2018and the actual number of units developed for different purpose during the period was

Assessment of Air Quality in Bangalore Before, During & After Covid-19 Lockdown

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***Abstract*—Air pollution is the presence of any solid, liquid or gaseous substances in the atmosphere in such a concentration as may be or tend to be injurious to human beings or other living being or creature or plants or property or environment". The major air pollutants are particulate matter (PM_{10}, $PM_{2.5}$ etc.), Oxides of nitrogen and Sulphur (NO_x, SO_x) and Ozone. A machine containing filters is used to collect dust sample at various locations around Bangalore. The samples are then sent to a laboratory to be tested for PM_{10}, $PM_{2.5}$, SO_x and NO_x. The test results are then used to calculate the Air Quality Index for respective locations. The data for various phases of lockdown was requested from Central Pollution Control Board. As per Indian National Air Quality Standards, average value is 60 for $PM_{2.5}$, 100 for PM_{10}, 80 for NO_2 and 80 for SO_2. The values are expressed in $\mu g/m^3$. From the tests results it was found that the air pollution had significantly decreased during the lockdown and there was an increase before and after the lockdown. The air around residential areas showed significantly less pollution compared to commercial and industrial area during Lockdown period.**

Keywords*—Air pollution; particulate matter; covid-19; lockdown; air quality index.

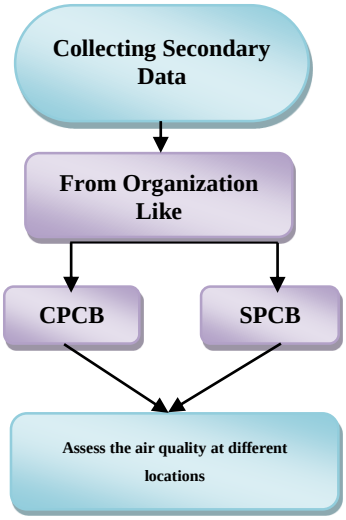
I. INTRODUCTION

According to World health Organization (WHO), Air pollution occurs due to, release of toxic Pollutants into the atmosphere beyond such concentration which can cause harm to human health and the planet. Every year, Air Pollution causes approximately 7 million deaths all around the world. Currently, Nine out of ten human beings are breath air which exceeds the WHO's standards.

In case of developing and under developed countries the air quality is considered as crucial. Air pollution is a serious threat to the human being, on account not only of its impact on public and individual health due to increasing illness. According to Rana et al. (2021), the effect of covid-19 lockdowns on pollutant concentrations in chaina was examined by synthesizing the reported evidence. The covid-19 was seriously affected public health worldwide and caused millions of infections and deaths, especially among the elderly. To prevent the spread of this infectious disease, the Chinese government took a nationwide contingency plan to restrict human activities. During lockdown, economic activities were reduced dramatically and people were isolated in their homes. Lockdown measures resulted in the improvement in air quality, as air pollutants such as particulate matter or less (PM_{10}), less ($PM_{2.5}$), SO_2, CO, NO_2 decreased significantly. To reduce or stop the spreading of the virus, the Indian government has announced complete lockdown except emergency services, pharmacies, medical shops etc, in that phase various transport was fully shut (except emergency services)during that time there was much more decrease was there in air pollution, they came up with a result which is the decrease of air pollution between the phases, it was examined by Chaudhary et al.(2021), in New Delhi, This research work was done by Chinnaswamy et al.(2016) in Bangalore one of the fastest growing and fastest development city in India, They have done a Time Series Analysis of 2006-2013, The have don't the critical analysis from 6 stations, and the air was assessed for 48 hours in a week, and they have come with an result that Bangalore has or is experiencing various levels of pollution with some areas having either high or critical levels of one or more pollutants. Researchers like, Jaeja et al. (2020), Coker et al. (2020), Malmqvist et al. (2018), Saud and Pandel (2018), Singh and Chauhan (2021), Selvam et al. (2020), Dasgupta and Srikanth (2020), Sekhara Rao Kolluru et al. (2020), Srivastava and Kumar (2019), Munappy (2018), Haque and Singh (2017), Gope et al. (2021), Chinnaswamy et al. (2016) conducted various studies to monitor air quality index in various parts of the world including Bangalore. Most of these researches shows that, PM_{25}, PM_{10}, NO_2& CO particular related to industrial activates & traffic, indicate a reduction during covid -19 outbreak.

II. METHODOLOGY

The study was carried out by following the methodology as described below;



Dynamic Analysis of Adjacent RCC Buildings for Pounding Effect

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***Abstract*—Collision of two adjacent buildings which are of different dynamic characteristics and having insufficient separation gap between the buildings is called seismic pounding. In present day scenario buildings are constructed very close each other in urban areas for the complete usage of limited land space. During earthquakes the buildings closely spaced have a chance of pounding on the adjacent building block. This study covers the effect of providing insufficient gap element between the two adjacent RCC buildings. A modal of two buildings close to each other one being G+7 storey and other being G+4 storey was considered. Model analysis and Response spectrum analysis is carried out for both buildings. The parameters like displacement and drifts were considered for the analysis by using Etabs and plotted them on graph to know the effect of pounding on adjacent buildings**.

Keywords*— *Seismic pounding, Gap elements, Response spectrum Analysis, Displacement and Storeydrifts.

1. INTRODUCTION

Pounding is one of the main causes of severe building damages in earthquake. Pounding effect refers to the collision of adjacent buildings during earthquake. It occurs when the distance between two buildings are lesser to face the relative motion during earthquake. When the seismic vibration occurs on the adjacent buildings, the load transfer from high rise building to the lower building and the lower storey building should not be constructed in such a way that to carry the transferred load. Its results in pounding between buildings which are narrow spaced, which causes severe damage. Investigation have shown that pounding damage was observed in Mexico (1985), Canada(1988),Kobe(1995),Nepal(2015)of earthquakes can be seen. The prevention measures to avoid the seismic pounding between the adjacent buildings are RC Shear Wall, Steel Cross Bracing, Dampers, sufficient separation gap between the adjacent buildings.

Fig1.1: 2015 Nepal Earthquake.Damages due to pounding effect

1.1 GAP ELEMENT

Gap element it is the link elements it is a compression memberor element which is required to access the force of pounding and to stimulate the effect of pounding the main purpose of thelink or gap element is to transmit the force through the link only when contact occurs and the gap is closed.

Therefore, the stiffness of the gap element is found as below.

$K= (AxEx10^2)/L$

Where, K= stiffness of the gap elementA= W x tE= Youngs Modulust = Slab Thickness
W= Average Element Width

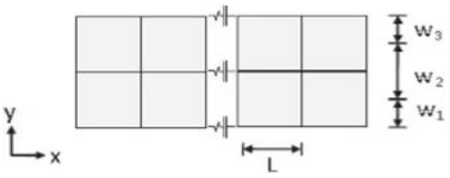

Fig: Shows the plan of the 2 colliding floors and the connecting gap element.

2. LITERATURE REVIEW

In this study, the pounding effect is analyzed. on the two adjacent buildings (G+7) and (G+4) • The gap taken of 50mm, 80mm, 100mm, 140mm is used the two adjacent buildings are analyzed for various cases equal floor level and different storey height, equal floor level and equal storey height and Setback of 3m with equal floor and different storey height. And Response spectrum analysis to carried out for both 3D buildings. Displacement and storey drifts are compared with all the gap on each case and Conclusions are arrived on their aspects of the study.

3. OBJECTIVES OF THE STUDY

1) To study the 3D buildings by considering seismic pounding effect during earthquake with different gap element.
a) 50 mm b) 80 mm c) 110 mm d) 140 mm
2) To study the seismic behaviour by analyzing the displacement value and storey drifts value.
3) Graph will be plotted for various gap and conditions and giving an idea how pounding will affect the 3D Building

4. METHODOLOGY

1) To carry out the proposed work 2 buildings models

Landslide Susceptibility Mapping using GIS based Statistical Models and Remote Sensing in Tropical Environment

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***Abstract*— Most shallow landslides are occurred by heavy rainfall on hill slopes which result in large casualties and huge economic losses in mountainous regions. Slope failure in hills occurs as soil resistance decreases in the presence of the stress acting which is been developed due to reasons such as increase in soil moisture content, changes occurred in land use causing slope instability and many more. Landslides occurred by rainfall can possibly be foreseen in real time by jointly using rainfall intensity-duration and information of land surface susceptibility. Terrain analysis applications using spatial data such as aspect, slope, flow direction, compound topographic index along with information derived from remotely sensed data such as land cover**

The project presents GIS based spatial data analysis for landslide susceptibility mapping in parts of Nandi hills. Six important causative factors for landslides were selected and corresponding thematic data layers were prepared in GIS. The input data were collected from the topographic maps, satellite image, field data and published maps. Numerical weights for different categories of these factors were determined based on a statistical approach and then integrated in GIS environment to arrive at landslide susceptibility map of the area. The landslide susceptibility map classifies the area into five classes of landslide susceptible zones i.e., very high, high, moderate, low and very low. An attempt was also made to validate the map with the existing landslides of the area. The results of the analyses also showed that the Geographical Information System (GIS) technology provides a powerful tool to do spatial analysis and to model landslide hazard

Keywords—GIS, Slope failure, environment, landslide.

INTRODUCTION

The Earth consists of atmosphere, hydrosphere, and lithosphere. These layers are subject to different processes due to mutual interaction or self-interaction. Interactions can lead to various phenomenon, weathering, erosion, floods, hurricanes, landslides, earth quakes, volcanoes, tectonic movements, etc., which can lead to natural hazard. Natural hazards are an integral component of life on Earth

Natural disasters are grouped as:

Hydro-meteorological disasters: avalanches/landslides, droughts/famines, extreme temperatures, floods, forest/scrub fires, windstorms and other disasters, such as insect infestations and wave surges

Geophysical disasters: earthquakes, tsunamis and volcanic eruptions. The number of recorded natural hazards has increased in the last 50 years with the greatest increase in frequency attributed to hydro-meteorological disasters, with a lesser increase attributed to biological disasters and a slightly lesser increase attributed to geological disasters. The pressure for infrastructure development to meet the need of rapid urbanisation and global competition has led to expansion of construction activities even in hilly terrains and has catapulted frequency of landslides to dramatic proportions in recent decades. Landslide refers to the movement of a mass of rock, debris, or earth down a slope or any down slope movement of soil and rock under the direct influence of gravity. This includes various types of slope failures, like, earth and debris flows, slumps, slides, and soil and rock fall. Landslide is a phenomenon of a mass movement of landform and which is characterized by moderately rapid to rapid (> 30 cm per year) down-slope transport, by means of gravitational stresses, of a mass of rock and regolith that may or may not be water saturated. Landslides are one of the normal landscape building processes in undulating terrain and are common in Himalayas and Western Ghats regions in India. It includes any detached mass of soil, rock, or debris that moves down a slope or a stream channel. They are classified according to the type and rate of movement and the type of materials that are transported

Two types of forces are at work: 1.driving forces combine to cause a slope to move, and 2. friction forces and strength of materials act to stabilise the slope. When driving forces exceed resisting forces, landslides occur. It is one of the common natural hazards with devastating effects. They become a problem when they interfere with human activity resulting in damage to property and loss of life, evident from recent episodes in Ooty (Tamil Nadu) and Kerala. In order to minimise the losses due to landslide, it is necessary to identify and analyse the most

Experimental Investigation on the Impact of Sulphate and Chloride on High Volume Fly Ash Concrete

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Abstract. High weathering action in the corrosive and chemically active environment can significantly affect the strength characteristics of the concrete and also excessive utilization of sand as fine aggregates in building construction enhances degradation of the environment and urges the need for an alternative source in the scene of sustainable construction. Fly ash has generally used an alternative of cement, such as an admixture in concrete, and production of cement. As per the literature it has been found that concrete containing fly ash as partial to complete replacement of fine aggregate has been found to increase strength on a long-term basis. An experimental investigation was carried out to evaluate the strength and durability characteristics of concrete building blocks by replacing fine aggregates with fly ash at 10% to 100% by weight of fine aggregate and subjecting it to chloride attack and sulfate attack. Various tests were conducted for the properties of fresh concrete. Compressive strength and flexural strength were determined at 28 days. Test results indicate significant improvement in strength properties of plain concrete by the inclusion of fly ash as partial replacement of fine aggregate (sand), and increase in resistance to sulfate and Chloride attacks and can be effectively used in structural concrete.

Keywords. Chloride attack; Sulfate attack; Fly ash.

1. Introduction

Fly ash is a waste product that is produced in thermal power plants. In India each year 250 million tons of fly ash is produced and its utilization percentage is well below 13%. Class F type fly ash is the most abundantly produced. Fine aggregates area natural resource and to meet the growing demand for concrete in the construction field we are exploiting them gradually. In this project, we will be using concrete that is made by using fly ash as a replacement for sand. In this way, we can save the natural resource by reducing its usage by using an alternative product. The demand for building materials like cement, sand, and coarse aggregate is increasing in the country due to the increase in the growth of population, economy, and living standards of the people. It has been some time now that some cement companies have started utilizing fly ash in the production of cement, known as 'Pozzolana Portland cement', but the overall percentage of utilization remains very low, and the majority of the fly ash ends upin landfills. It has been noted that concrete containing fly ash as partial replacement of cement has problems of delayed early strength development and concrete containing fly ash as partial replacement of fine aggregate will have no delay in early strength development, but would rather improve its strength on a long-term basis. This project is designed to explore the possibility of replacing fine aggregate with fly ash and evaluate the characteristic strength when subjected to sulfate and chloride attack. The behavior of high-volume fly ash concrete in response to the various chemical

PARAMETRIC EVALUATION OF SOIL EROSION QUANTITY WITH WATER QUALITY PARAMETERS FOR ASCERTAINING THE ENVIRONMENTAL SUSTAINABILITY OF THE AREA

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Abstract - **The long term soil erosion estimated using Universal Soil Loss Equation contributes to the silt load in surface water streams at the exit of the watersheds. The suspended silt load in surface water streams gets added because of deterioration of water quality caused due to behavioral practices of the people placed in the area. In this context the soil loss estimated through the process model after automated delineation of watersheds using Digital Elevation Model (DEM) as the input can be utilized to quantify the soil loss for the delineated watersheds. The surface water quality gets affected because of the behavior of the people who contributes to the pollution resulting in the increase of suspended concentration that adds up with the sediment load due to soil erosion apart from reducing the quality of water. The parametric evaluation of water quality parameters with soil erosion derived silt load can give an assessment on the anthropogenic influence on soil loss and surface water quality carried out through relations established between these parameters with an objective of reducing environmental degradation with a vision to scientifically manage soil, water and vegetation resources apart from ensuring proper behavioral practices of people living in the area of watershed for achieving controlled silt load in water owing to soil erosion and bringing water quality parameters to an acceptable level with prevention of rapid silting of the water bodies that affects sustainability. The details of the above work are discussed in the paper.**

Index Terms - Soil Erosion, water quality, Raster Interpolation, Composite Quality Index, sustainability, automated watershed delineation, comparative assessment.

Introduction

Watersheds are planning units suitable for planning environmental sustainable issues such as soil erosion, anthropogenic caused water quality and associated health issues of local population and are effective in the fragile and heterogeneous ecosystem (Sharma, 1992). The Digital Elevation Model (DEM) obtained from terrain analysis is input to automatically delineate micro-watersheds required in land cover study, evaluation for slope, soil erosion quantification and water sample collection for water quality analysis at the exit of every delineated watershed necessary for environmental sustainable growth. (Saha, 1992). The rain fed watersheds of the study area has semi hilly landscape and it is subjected to soil erosion apart from deteriorated water quality standards caused by local population behavioral practices and is considered as main threat for sustainable development. Comparative assessment of annual soil loss with the measured water quality and environmental related health issues can help in framing plans for action to conserve land and water resources leading to better water quality, reduced silt load in water and better health of local population in every delineated micro-watershed. The Universal Soil Loss Equation (USLE) gives soil erosion prediction and is applicable in GIS environment (Moore and Wilson, 1992). The effect of temporal variation on soil erosion can be approximately simulated by analyzing the isolated rain events (Kotyari, 1997). The factors associated with cropping, conservation and soil erosive factor used in the model can be arrived using good

EVALUATION OF SCS RUNOFF RATE WITH CONVENTIONAL RUNOFF RATE AND OBTAINING STORM RUNOFF COEFFICIENT

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Abstract - **Watershed based runoff computation using SCS model can be quantified using Remote sensing data that gives Level-1 details of the landscape. The runoff volume and rate estimated based on weighted curve number and for the specified hydrological soil group covering different antecedent soil moisture conditions are expected to be reliable. They are also shown to have good correlation with morphological parameters of the watersheds and therefore useful in computing the coefficient of runoff to be used in rational runoff formula used for storms of different duration and return period. This is having relevance in the design of conservation structures. The coefficient of runoff available in Rational model and obtained through SCS model is shown to be have good compatibility and validation for storms of different duration and return periods. This is also corroborated with low residual error between the runoff computed from SCS method and corresponding runoff from rational model that has a linear equation fit between them. The work on the same has been given in the paper.**

Index Terms - Runoff rate, Return period, storm duration, automated watershed delineation, image classification, and curve number.

INTRODUCTION

Rainfall is the primary source of water that generates runoff over the land surface. The precipitation from rainfall generates the surface runoff and the issues associated with meteorological parameters also have contribution for runoff. The runoff is affected by precipitation characteristics such as its magnitude and rainfall distribution and rainfall duration apart from factors like direction of prevailing winds, temperature, wind velocity, relative humidity, and annual rainfall that affect the water output from the watershed area to a large extent. Other issues affecting runoff are temperature variation, velocity of wind, the atmospheric humidity, the variation in direction of prevailing wind and the yearly rainfall. These factors are responsible for the quantum of water output from the area of watershed. The topographic variation, shape, orientation, land utilization and existing soil moisture of watershed affects the runoff volume and rate. Larger watershed do have tendency to reduce peak flow caused due to more time required for draining the surface water to the outlet. Slope variations have good dependency on runoff because of its direct linkage with overland flow time and concentration time [3]. The landscapes with conservation practices have large effect on runoff [10]. The extent of yield from runoff also depends on existing soil moisture during the rainfall event and is called antecedent soil moisture [6]. The quantification of surface runoff is possible through soil conservation services (SCS) approach through use of remotely sensed data [12]. The land use and land cover pattern along with land management practice followed in the watershed have great effect on the runoff [1].

The magnitude of runoff yield also depends upon the amount of moisture present in the soil at the time of rainfall called as antecedent soil moisture [6]. If the antecedent soil moisture is more than infiltration is less, which produces more runoff. The type of soil has an effect on infiltration and eventual surface runoff; the topographic characteristics include topographical features of watershed has a greater runoff than the flat land [2]. The runoff estimation utilizing the soil conservation services (SCS) model using remote sensing data can be applied to groups of

APPLICATION OF ANALYTICAL HIERARCHY PROCESS MODELING TO WATERSHEDS FOR SUSTAINABLE DEVELOPMENT

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Abstract - **The quantitative approach for ascertaining the reliability of watershed based conservation measures suggested for sustainable development on the basis of integrated analysis is possible by applying the technique of Analytical Hierarchy Process Modeling (AHP) carried out through use of different watershed related criteria on a collective basis. This is found to be helpful in assessing the extent of sustainable growth of the different watersheds. The AHP technique has been observed to be useful for assessing environmental sustainable development of different watersheds for the area under consideration. The modeling approach is also found to be productive for the different watersheds in which integrated watershed based conservation measures have been suggested for conserving soil and water through application of site suitability measures established as per Integrated Mission for Sustainable Development (IMSD). In this context the temporal analysis of watersheds as applicable for different chosen sustainability criteria of watersheds are helpful in quantifying the extent of sustainability. This also acts as reliability measure for the suggested watershed based conservation measures apart from ensuring prioritization of different watersheds for stage wise improvement to be executed after evolving developmental strategies leading to sustainability of the area. The sustainability analysis of issues using different criteria associated with sustainability can derive economies, increase in efficiencies of conservation measures, improved productivity, and above all good returns on investment (ROI). The AHP analysis is applicable for the chosen watershed based sustainable criteria to assess the reliability of the suggested conservation measures for studying improvement in environmental sustainability as observed from multi-temporal remote sensing and other spatial data. The criteria for ascertaining the reliability of conservation measures can be improvement in productive land cover, reduction in degraded area, reduction in soil erosion potential, reduction in runoff due to construction of water conservation measures, and reduction of ruggedness number associated with construction. Temporal change in land cover type based on the suggested activities, and associated. Environmental impact requires scientific deliberations to study the impact of landscapes changes, anthropogenic influence, and its further usability. The temporal changes in land cover for a given period can be studied using LISS-III remotes sensing data covering the area and by grouping the watershed area into two cover categories. The cover-1(C1) in the area can give an assessment regarding improvement in productive land cover and in the same manner the cover-2(C2) can be utilized to indicate reduction in degraded land during the period. The AHP analysis in the same manner is considered suitable to ascertain the reduction in the remaining three chosen watershed criteria during the temporal period. The AHP analysis involves assigning subjective weights ranging from one to nine based upon the extent of reduction or increase given to the chosen watershed criteria are that improves environmental sustainability.**

Index Terms - Spatial Interpolation, AHP Modeling, Integrated Watershed Development, Composite Sustainability Index, Environmentally Sustainable Development, Soil and Water conservations, Soil and run-off estimation models.

INTRODUCTION

The quantitative approach for ascertaining the reliability of watershed based conservation measures suggested for sustainable

Cost-Efficient Arduino-based Automated Washroom Sanitizing System

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Abstract— The proposed project is based on automated washroom sanitizing system that mainly deals with solving the problem of unhygienic condition of public toilets. Sanitation is one of the largest problems faced by people in our country. Even though 6 percent of the urban people are relying on public toilets for their daily use, they are still not hygienic. This has become one of the most basic issues faced by people everywhere. Providing the best solution to this issue is the aim of our project. The existing method involves manual cleaning done by a human which is not at all an easy task and may not even exist in all areas. Implementing a facility to clean the major units of a washroom after several cycles will maintain a sufficient hygienic environment. The cleaning process is aimed to be automated and simple. Such a provision will ease the job of regular janitors as well as the users. Placing sensor-controlled water flusher attached to the toilet will perform the cleaning task and meanwhile, the number of cycles used is recorded to activate the automated cleaning process. On selecting ESP32 microcontroller as suitable interfaces we aim to provide an easily compatible facility at an economically feasible rate. We aim to ease the brushing technology using a simple belt and DC motor-driven mechanism. Hence, on adopting this methodology, we will be able to increase the standard of public and community toilets and facilitate people to use these effectively.

Keywords—sanitization, automation, sensors

I. INTRODUCTION

In our country due to unhygienic toilets people suffer from various diseases like typhoid, cholera, hepatitis, etc. This happens because of improper use of given facilities, negligence by maintaining staff, unavailability of resources, etc. Also, the maintenance staff has to be there for maintaining the toilets whole day. This is a pity job to stay in the toilets for whole day even when not paid adequately nor provided safety equipment. A comfort station may be a room or small building with one or more toilets (or urinals) available to be used by the overall public, or by customers or employees of a business. Mostly Public toilets are commonly female facilities although some are unisex, especially for little or single-occupancy public toilets. Increasingly, toilets are also for people with disabilities. Some public toilets are free from charge while others charge a fee. In the latter case they're also called pay toilets and sometimes have a coin-operated turnstile. Local authorities or commercial businesses may provide comfort station facilities. Some toilets are unattended while others are staffed by a janitor or an attendant. Public toilets are typically found in schools, offices, factories, and other places of labor. Similarly, museums, cinemas, bars, Entertainment venues and many other places usually provide public toilets [1][2][3][5].

We propose a system that ensures the cleanliness of the restroom every time after its use. Even the cleanliness level is monitored keenly and rated so that the travelers who are new to the place can use the restrooms by knowing the cleanliness level.

II. LITERATURE SURVEY

i. Developing smart toilets using IOT [2018]:

This paper is based on IOT and image-processing concepts using different sensors like smell sensor, IR sensor, sonic sensor, RFID reader to create a smart toilet [4]. Model consisted of well-designed brush coupled to the motor which rotates at an appropriate speed. When the motor runs, ultimately the brush rotates. Semi-automatic toilet cleaning brush consists of a tube connected to the container which carries the chemical solution to increase the viscosity between the bowl surface and the toilet stain, thus helping the user to flush away the stain with much less effort. The release of chemical from the tank is by a simple valve mechanism. A telescopic stem with a single plunger pipe is implemented which can be locked at the desirable length. The inner pipe slides through the key way of the outer pipe. It is handy and can be moved anywhere.

ii. Design and Refabrication of Advanced Mechanism for Indian Dome Cleaning [2019]:

This project uses rack and pinion arrangement along with washer to clean complete system. A high torque motor is used to clean the complete floor. This complete system is power saving and takes less time to complete the task. This system is cost effective. This system would be useful at home, schools, colleges, hospitals, companies, factories and anywhere. [9]

iii. Design and development of automatic Indian lavatory Cleaning robot [2019]:

The paper presents design of automatic Indian lavatory cleaning robot. The cleaning system is fully automatic and requires low operational power for cleaning purpose. Furthermore, to thoroughly clean the toilet, robotic arm is used and this arm is part of cleaning module. Microcontroller ARM LPC 2148 is used to control the action of cleaning robot. The real time clock is used to perform particular action at particular time. [6][7][8][10]

EEG data processing for Emotion detection using DTCWT and FFNN Architecture Design

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Abstract— Emotion detection and classification algorithms developed are based on wavelet features and neural network approaches which hare limited to software implementation only. Very little literature is reported on hardware implementation of EEG detection and classification approaches. One of the major challenges in hardware implementation is the computation complexity of DWT processor and FFNN architecture. In this paper, architectures for data path operation of both DWT and FFNN structures are designed and are implemented on FPGA platform. A low power and high speed architectures for DTCWT and neural network are designed based on customized systolic array logic and reusable data path circuitry respectively. The nine-stage DTCWT architecture designed is designed to work at maximum frequency of 322 MHz consuming less than 0.71 W of power. The FFNN structure is designed to operate at maximum frequency of 321 MHz consuming less than 2.2 W of power. Both of the architectures are suitable for real time EEG data processing.

Index Terms— DTCWT, Emotion detection, FFNN architecture, FPGA platform

I. INTRODUCTION

With complex wavelet transforms demonstrating shift invariance property, EEG signal analysis using Dual Tree Complex Wavelets (DTCWT) has recently gained much importance. In EEG data processing, artifacts that get integrated with EEG recording cause disturbances in accurately extracting features. Due to the complex interconnections between billions of neurons, the recorded EEG signals are complex, non-linear, non-stationary and random in nature, **U.R. Acharya [1]**. Feature based classification algorithm based on neural network approaches rely on input data vector and the intensity levels of feature vectors for accurate classification. The trained network weights and biases that process the input data performs classification of emotions and any deviations in input patterns may lead to unsuccessful in
classification. In addition to artifacts, any movement electrode due to head movement also introduces artifacts.
Further to artifacts, recording of EEG data at different time intervals also lead to variations in event occurrence in EEG. In order to design reliable and invariant system for feature detection and classification, DTCWT is used in place of DWT. In this paper, a detailed discussion on EEG feature detection and classification based on DTCWT and Feed Forward Neural Network (FFNN) is presented. DTCWT is an enhancement to the discrete wavelet transform (DWT). It is a shift invariant and directionally selects two and higher dimensions, **Selesnick Ivan W** [**2].** It achieves a redundancy factor of 2^d for d-dimensional signals,which is lower than the undecimated DWT. The multidimensional (M-D) DTCWT Transform is non separable but is based on a computationally efficient, separable filter bank (FB). The DTCWT of a sign, x(n) is executed utilizing two fundamentally inspected DWT's as a part of parallel on the same information. DTCWT coefficients are non-swaying with an almost move invariant greatness and altogether lessened associating with more directionalities when contrasted with the DWT.Thus is it more efficient in time frequency localization of EEG signal. Similar to the positive or negative post-filtering of real subband signals, the idea behind dual tree approach is quite simple. **Kingsbury N [3]** according to the author, DWT is very sensitive in the translation, it is very less effective in the domain of statistical signal processing. To address the, shift-variance problem a new method is employed by considering two DWT's, one of DWT gives the real part of the transformed co-efficients and the other one gives the imaginary part. By combining the co-efficients of two DWT's into complex-valued co-efficients, a new transform is obtained by the name Dual Tree Complex Wavelet Transform (DTCWT).This new transform has some, characteristic properties including near shift-invariance, better directional selectivity, which is very important in signal processing. **Musa et. al** [**4**], in this study first the features of EEG data are extracted using a dual-tree complex wavelet transformation at different levels of granularity to obtain size reduction and statistical features are extracted. Five statistical features are extracted from new dataset with reduced size and are classified with the help of Complex valued neural networks (CVANNs) using DTCWT in the classification of EEG data. The proposed method is tested using a benchmark of EEG dataset, and high accuracy rates are obtained. The stated results show that the proposed method can be used to design an accurate classification system for epilepsy diagnosis. **R.Y.Yu** [**5**] proposed that DWT is not able to cancel the aliasing, thus resulting in unclearly separated sub-bands. The dual-tree complex wavelet transform (DTCWT) was first introduced by Kingsbury, and he proposed to extract the signal component related to sensory motor rhythms. There are several 1D-DWT architectures the most popular ones are, Direct Mapped Architecture, Folded Architecture, MAC Based Programmable Architecture, Flipping Architecture,

Women Empowerment in India: Issues & Challenges

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Abstract— Empowering a woman has been one of the main concerns in 21st century. Women are becoming victims of various social evils. Women empowerment can be used as a vital instrument in supporting a woman to access resources and to make strategic life choices. The main objective of this paper is to assess the need for women empowerment in India, analyze the factors that influence empowerment of women in India, discuss various government schemes for women empowerment-implementation and hindrances. The data used here are from secondary sources.

Index Terms— Empowerment, crimes against women, government schemes, IPC, SLL

I. INTRODUCTION

Empowerment and autonomy of a women plays a very important role politically, socially and economically to achieve sustainable development of the society. Participation of both women and men is essential in the development of the society, maintenance of household, reproductive life and nurturing children. In almost all parts of the world, women are not treated at par with men in respect to wages, power and influence. In many regions across the world women are not allowed to pursue their education, or receive less formal education compared to men. To overcome the disparity, we need policy and programs that will support women and create an awareness regarding their rights and duties. Education plays a very important role of empowering women with knowledge and skills to participate in the development process. Indian constitution in its preamble, Fundamental duties ,rights and directive principles has ensured protection of gender equality. The constitution grants equality to women and also has authorized the states to take measures in favour of women against discrimination. From the 5th five year plan onwards there was a significant shift in the way women's issue were approached from welfare to development.

A girl may be a victim of crime, or target of crime from the time of her birth. As they grow, nature of crimes vary. The table below lists various types of crimes a women may suffer from her birth time.

Many women suffer quietly and do not dare to report it. If she tries to do so, she will be suppressed or silenced.

Table1: Various crimes on women during their life stages

Life stages	Crimes
Foeticide & Infanticide	Preferences for son both economically and culturally, diagnostic tools leading to female foeticide
School going age	denied access for primary education compared to boys and discrimination
Adolescence	Rape, acid attack, early marriage, sexual abuse, exploitation
marriage	Harassment- both physical and mental, dowry deaths
Motherhood	Lack of proper medical care, hygiene, healthy food, compelled to abort a female foeticide
Workplace	Unequal pay and promotions, exploitation, physical, economic and emotional abuse

- **Crimes against women in India:**

Crimes against women in India have a large negative impact on women empowerment in India. The statistics released by NCRB (National crime records Bureau) has revealed a shocking fact about the number of crimes on women during the year. As per the NCBR (National Crime records Bureau) report, a crime rate of 46 per 100,000 has only been reported. Table 2 lists the NCBR statistics of crime against women for the year 2018 & 2019.

Table2: NCBR statistics of crime against women in India for the year 2018 & 2019[1]

Sl no	**Crime Head(IPC+SLL)**	**Year**	
		2018	**2019**
1	Murder with rape/gang rape	294	283
2	Dowry deaths(sec 304B IPC)	7166	7115
3	Abetment to suicide(sec 305/306 IPC)	5037	5009
4	Acid attack(sec 326A IPC)	131	150
5	Cruelty by husband or his relatives(sec 498A IPC)	103272	125298
6	Kidnapping and abduction of omen	72751	72780
7	Human trafficking(sec 370 & 370A IPC)	854	1991
8	Selling of minor girls	40	22
9	Assault on women ith intent	89097	88367

Wireless Sensors Network for Radiation Monitoring Using IoT

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Abstract— The changes in climate led to the increased importance of environmental monitoring. In order to determine the quality of the environment, continuous tracking of the environmental parameter is needed. As the IoT is the most emerging technology, it plays an important role in collecting the information from the sensing unit. Generally sensing unit is composed of different sensors like temperature, humidity, moisture etc. The project uses a Node MCU Wi-Fi module that helps in processing and transferring the sensed data to the Thingspeak cloud. Thus the parameters received are stored in the cloud platform (Thingspeak).The changes in the environment are updated in the form of database through the cloud computing method. This paper presents the development of a flexible environmental monitoring system that allows the monitoring of parameters in the workplace, required for optimal performance. Several sensors and three modules, with different functionalities, are used to complete the system.

I. INTRODUCTION

The advancement and innovations in technology triggers the needs for controlling and monitoring of different environmental parameters such as temperature, humidity and CO2.The system hardware platforms are basically low-power embedded micro-controller systems with onboard sensors and analog I/O ports for connecting the sensors. Prediction and estimation with Node MCU has two components, Hardware components and Software components. Hardware components detect and organize the environmental parameters
e.g. Node MCU board, bread board, sensors, jumper wires, USB cable for connecting Node MCU board with computer. Then second component is Node MCU software which tells the hardware components of Node MCU what to do. Initially, the hardware connection is made and deployed, the connection in environment surfaces to detect the parameters (e.g. temperature, humidity, sound , pressure and co2 and etc.) while the program codes extract and organize data from the sensors which are placed at different locations, manage it and display variations in the environmental parameters. The output of each sensor is then loaded and displayed in a serial monitor (LCD). The program in Arduino IDE uses looping i.e. a particular program will keep on iterating until it has been terminated.

II. LITERATURE REVIEW

Vax, E.Etal [1] grew Fast arrangement, constant Environment Radiation Monitor Systems (E R M S), this meets before and after radiation occasion necessity. This complete framework empowers online ecological and radiation information exchange on different customers of an assortment in sensor composes, e.g., radiation gamma rays, wind heading and fast, gathered in quick arrangement observing stations. This entire framework empowers fleeting spatial investigation in radiation well-being and post occasion hazard examination. Sean M. Brennan, et al[4], in their work have described discovery points of confinement in sensor systems in move the radiation source utilizing Bayesian techniques in conjunction along PC reproduction. This investigation includes point source moved in consistent speed, imitating vehicle transport in a Narrow Street. Reenactments are appeared to be valuable for positioning hopeful hub layouts. Seen M. Brennan, Et al[4], in their work have portrayed location breaking points of sensor systems in transporting radiological source utilizing Bayesian techniques on conjunction along PC reproduction. This examinations include point source moving at steady speed, imitating vehicle transport in a narrow street. Reproductions are appeared to be helpful for positioning competitor hub designs.

R. Lubis and A. Sagala[5], proposed another strategy Redis, an in memory database innovation which is another development in elective No SQL and huge information which empowers minimal effort ware equipment. Rather than plate, memory utilize as a part of Redis is for the most part to evade inertness amid I/O forms. They endeavor to uncover dormancy and enhance execution by testing multi-string approach amid short message (SMS) conveyance in single string Redis condition in mix with Rapid pro, a mass SMS administration stage.

G. Venkatesh and P. Chandramouli[6], explains complete design and integration of WSN, used for monitoring of remote places and about various applications of IOT. Parameters such as long lifetime, low maintenance, high QOS etc., for wide range monitoring applications are discussed.

Longitudinal Stability Analysis of an Aircraft using RBFANN

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Abstract— The emergence of neural network is a promising tool for complex system for verifying nonlinear dynamic and stability analysis. One research area that is tremendously benefitted is intelligent control and performance analysis of aircraft this paper presents analysis of longitudinal stability and Develop and on-line control scheme that utilizes a dynamically structured Radial Basis Function Network (RBFN) for aircraft control. By using synthesis approach, the tuning rule for updating all the parameters of the dynamic RBFN which guarantees the stability of the overall system to be derived and Analysed. The robustness of the proposed tuning rule, Perform Simulation studies using the aircraft longitudinal model which demonstrates the efficiency of the method and also show that with a dynamically structured RBFN, a more compact network structure can be implemented for stability analysis of an aircraft.

Keyword: Radial Basis Function , Gaussian Function, Longitudinal stability

I. INTRODUCTION

Neural networks have been used to tackle problems for which conventional approaches have been proven to be ineffective. However, the use of neural networks for on-line control schemes is sparse , especially in areas such as flight control because a large computation time is required for the learning process. Radial Basis Function (RBF) neural networks, have good global generalization ability and a simple network structure that avoids lengthy calculations. Number of algorithms have been proposed for training the RBF network, The classical approach to RBF implementation is to fix the number of hidden neurons a priori along with its centers and widths, based on some properties of the input data, and then estimate the weights connecting the hidden and output neurons. Two methods have been proposed to find the proper number of hidden neurons for a given problem. I.e build the hidden neurons from zero to the required number with the update of the RBF parameters being done by a gradient descent algorithm, other one is start with as many as hidden units as the number of inputs and reduce using clustering algorithm. However, in the main learning scheme is of batch type, which is not suitable for on-line learning

Advent of engineering, simulation and predict of system behaviour play an important role in aircraft design. The Modern fighter aircraft involves a nonlinear system complex and design with adequate performance over its entire flight regime is a challenging problem. Hence incorporate Neural network with online learning can adapt and provide good fault tolerant capabilities[2]. Among various method the RBFN has proven suitable with fixed number of neuron with center and width of the Gaussian function. In[3], Simon Fabri and Kadirkamanathan use a dynamically structured RBFN that grows according to system state. The RBFN are updated according to the tuning law derived from Lyapunov stability theory when there is no growth in the network, hence the changes in the system dynamics can be captured quickly.

In flight dynamics 3 degrees-of-freedom longitudinal flight simulation model will have a capability to solve longitudinal equations of motion for any given aircraft geometry. The longitudinal dynamic stability characteristics of an aircraft are derived from longitudinal equations of motions and will be trimmed to determine whether an aircraft is statically and dynamically stable at be trimmed at reference flight condition. In Fabri's scheme, two neural networks are utilized to approximate the dynamics f(z) and g(z) of the affine system, while in this paper, the well known "feedback-error-learning" scheme is used since it has the advantage of learning the true inverse dynamics without requiring that the network be trained offline[5].In this paper , a stable tuning rule for updating all the parameters of a RBFN controller is derived which will guarantee the stability of the overall system.

II. RADIAL BASIS FUNCTION NEURAL NETWORK

The radial basis function (RBF) neural network is a feed-forward neural network, which has good performance of best approximation and global optimum. The broad use of RBF is in function approximation, prediction and regressions problems. The RBF neural network architecture consist of three layers composed such as input layer, hidden layer, and output layer. The input layer accepts the input vectors to the network, perform data processing normalization processing. The hidden layer has number of hidden neurons and described based on issues described., Each hidden neuron has a radial basis function which is a center position and symmetric nonlinear function with local distribution. Upon the calculation of center, width, the input vectors are mapped to the hidden has radial basis function

$$y_i = f_i(x) = \sum_{k=1}^{N} W_{ik}\,\varphi_k(x, c_k)$$

$$= \sum_{k=1}^{N} W_{ik}\,\varphi_k(\|x - c_k\|_2),$$

$$\forall i = 1,2,\ldots m \text{ ----------1}$$

Camouflage based Emergency Vehicle priority with Intelligent Traffic Controller using Movable Road Dividers

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Abstract— The main aim of this project is reducing the traffic congestion in our daily life. Road Divider is generically used for dividing the Road for on-going and incoming traffic. This helps keeping the flow of traffic; generally, there is equal width of lanes for both on-going and incoming traffic. The problem with Static Road Dividers is that the number of lanes on either side of the road is fixed. Since the resources are limited and population as well as number of cars per family is increasing, there is significant increase in number of cars on roads. This calls for better utilization of existing resources like number of lanes available. It is seen that terrible road congestion problems in cities. Moreover, the situation is getting worse when emergency vehicles have to wait for other vehicles to give way at intersections with traffic lights. This causes a delay of time and may affect the emergency case. Besides, the collisions with other vehicles from other direction might occur at intersections when emergency vehicles had to override the red traffic lights. All these difficulties faced by emergency vehicles can be avoided using this traffic light control system based on radio frequency transmission. The system will reduce accidents which often happen at the traffic light intersections because of another vehicle had to huddle for given a special route to emergency vehicle. As the result, this project successful analyzing and implementing the traffic assistance system for emergency vehicles. In the new evolving world, traffic rule violations have become a central issue for majority of the developing countries. People may violate the tragic rules , they may jump signal to avoid this our project presents Automatic Number Plate Recognition techniques. It recognizes Plate localization and Character recognition which makes it easier and faster to identify the number plate. Message is sent to vehicle owner for violating his rules and simultaneously it is sent to near by police station.

Index Terms—Traffic management; Emergency vehicle Priority; Number plate Recognition

I. INTRODUCTION

Existing System

Commuters daily face extreme traffic during peak hours resulting in a delay to reach their destination. In the morning, during peak hours the traffic on one side of the road is more compared to opposite side of the road, same is the situation in evening. To tackle this problem Abdulreidha Abdulrasoul Alsaffar, had published an idea is US in 2013, which included a technique to solve the problem by moving road barriers using heavy vehicles before the accumulation of traffic in peak hours. The approach used to move the road barrier transfer machine are, Barrier transfer machines, also known as zipper machines, are heavy vehicles used to transfer concrete lane barriers. It contains an S-shaped channel in its under-carriage which lifts the barrier segments off the road surface and transfers them over to the other side of the lane. This reallocates the traffic lanes to accommodate increased traffic for the currently dominant direction. These barriers are linked together with steel connectors to create a sturdy but flexible safety barrier. Moveable barriers are in permanent use in cities like Auckland, Montreal, Canada, Philadelphia, Pennsylvania, New York etc.

II. PROPOSED SYSTEM

In this proposed system, a module has been developed based on microcontroller that consists of an ultrasonic sensor which is used for measuring the traffic density in this case and two dividers normal and extended. When the signal turns red, the traffic density is measured and the action should take place before the signals turns into green. If the traffic density is high then the extended divider comes up and the normal divider goes to ground position. Since the traffic density is high a message is delivered stating that 'Alert PLS traffic density is high, extended divider is up' to the nearest traffic control room. If the traffic density is normal then no type of action is taken and the normal divider is up and the extended divider is to ground level. In this case the traffic density is normal then a message is delivered stating that 'Traffic density is normal. Normal divider is up and the extended divider is to ground level to the nearest traffic control room. Since it is a demo module, we are just showing for the one way of traffic flow.

Design of Single Axis Solar Tracker

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Abstract— This project discusses on the development of horizontal single axis solar tracker using Arduino UNO which is cheaper, less complex and can still achieved the required efficiency. For the development of horizontal single axis solar tracking system, two light dependent resistors (LDR) module has been used for sunlight detection and to capture the maximum light intensity. A 10 RPM gear motor is used to rotate the solar panel to the maximum light source sensing by the light dependent resistor (LDR) module in order to increase the efficiency of the solar panel and generate the maximum energy. The efficiency of the system has been tested and compared with the static solar panel on several time intervals theoretically from a internet source. A small prototype of horizontal single axis solar tracking system will be constructed to implement the design methodology presented here. As a result of solar tracking system, solar panel will generate more power, voltage, current value and higher efficiency.

I. INTRODUCTION

In this globalization era, demand of electricity keeps on increasing year by year. The demanding of electricity gives an impact on the loss of main resources to produce electrical energy. Mankind have explored more ways and technologies for the production of electrical energy using the renewable energy resources. Renewable energy is an energy which generate from natural resources which are naturally replenished. Among all the renewable energy resources that have been discovered, solar energy is the most suitable. The solar energy provides light, heat and energy to all living things. Solar energy is a free energy which does not have any price if using it. Furthermore, solar energy does not produce any pollution, environmental friendly and endless supplies. Solar energy is an energy generated by the sun in the form of solar radiation. Solar radiation from the sun is collected and absorbed by the solar panels and convert into electrical energy. Solar energy shows a great potential for conversion into electrical in entire world because it has very high radiation levels.

Hence a solar tracker is one of the famous devices used that orients a payload toward the sun sunlight and a photovoltaic panel to maximize the amount of energy produced from PV system.

II. OVERVIEW

The proposed tracking system tracks the sunlight by rotating the solar panel on a single axis. The single-axis solar tracker follows the angular height position of the sun in the sky in addition to following the sun's east- west movement. This solution of single-axis solar tracking system based on motion algorithm, which can predict the exact apparent position of the sun, by the latitude's location, thereby avoiding the need to use guidance systems. To accomplish this, it is used a low-power microcontroller, suitably programmed, to control an electric motor to ensure that the panel supporting structure is always oriented towards the sun. The tracker model consists of Light Dependent Resistor (LDR) Module. Arduino UNO microcontroller,

L239D motor driver, Solar Panel, and 10RPM gear motor in which the motor is basically performing the function of sun tracking.

III. OBJECTIVES

The main Objective of the project is to utilize the maximum solar energy by using the solar panel.

HARDWARE

This section will be focusing on the methods used to develop horizontal single axis solar tracker using Arduino approach. It is divided into sub-section which include the specification of components, software design and hardware design.

ARDUINO UNO

The Arduino UNO is a micro-controller board based on the ATmega328 as shown in Figure 1.

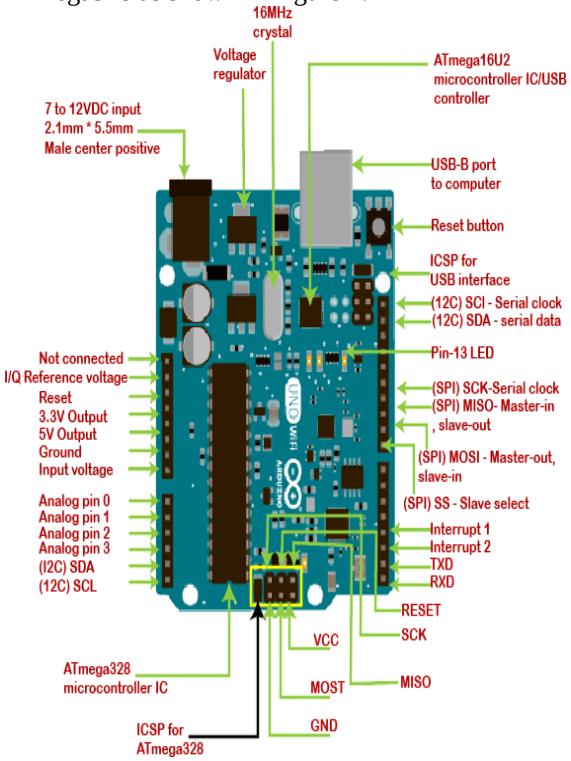

FIGURE 1: Arduino Uno

Electronic Voting Machine using Face and Fingerprint Recognition

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Abstract— The primary right of voting in the election is the fundamental yardstick of a democratic citizen. During the modern era, Electronic Voting Machine has been introduced which has marked a significant change in the conventional voting system in India replacing ballot papers and boxes which are used earlier. We all know that, fake voting is still a major drawbacks in the Elections. In order to overcome this we are designing a Smart Voting machine based on face and fingerprint recognition.

Keywords— Electronic Voting Machine, Face Recognition, Fingerprint Recognition, Arduino uno.

I. INTRODUCTION

Election is the act of party casting votes to elect on individual for some type of position. election may involve a public or private vote depending on the position. most position in the local, state, and federal governments are voting on in some type of election. in paper-based elections, voters cast their votes by simply depositing their ballots in sealed boxes distributed across the electoral circuits around a given country. When the election period ends, all these boxes are opened and votes are counted manually in presence of the certified officials. in this process, there can be error in counting of votes or in some cases voters find ways to vote more than once some times votes are even manipulated to distort the results of an election in favor of certain candidates. in order to avoid these shortcomings, the government of India came up with direct-recording electronic (DRE) voting system which are usually electronic voting machine (EVM). These devices have been praised for their simple design, ease of use and reliability. however, it has been found that EVM's are not tamper proof and are easily hacked. moreover this attacks, hardware as well as software, go without any detection but are quite simple to implement. This made us to bring forth a system that is secure, transparent, reliable as well as easy to use for the citizens. Smart EVM systems are not a phenomenon anymore they are being actively used in many developing nations. In this project, we propose an idea to avoid fraudulence in mechanism to make e-voting in India a reality. It improves the security performance and avoid forgery vote because naturally one human finger print is different from other human.

II. PROPOSED SYSTEM

In the proposed method, the details of the voter will get from the registered Voter ID and AADHAR card database. It was already developed a database which is having all the information about the people,. By using this data base we took the voter's information will be stored in the excel sheet. Face and Finger print recognition refers to the automated method of verifying a voter. Web camera capture the face image and compare or match to the database, capture face and database face matched means this person will be asked to place his face on the biometric fingerprint device which compare the finger print and database fingerprint if it is matched means this person will be valid for casting his vote otherwise it will display a message in the LCD and also through voice saying that unknown voter. If the person try to fake his vote which means if he try to vote for second time then the warning message will be displayed saying that already voted. It uses a advanced microcontroller arduino uno.

III. BLOCK DIAGRAM

The System uses a Arduino uno controller for fingerprint recognition and all the details are displayed in LCD as shown in the block diagram in figure 1.

Hardware Arduino uno

Arduino is an open source prototype platform based on an easy-to-use hardware and software. Arduino Uno is a microcontroller board based on the ATmega328 (datasheet). It has 14 digital input/output pins [12] (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz crystal oscillator, a USB connection, a power jack, an ICSP header, and a reset button. Microcontroller: ATmega328,Operating Voltage: 5V, Input Voltage (recommended): 7-12V, Input Voltage (limits): 6-20V, Digital I/O Pins: 14 (of which 6 provide PWM output), Analog Input Pins: 6, SRAM: 2 KB (ATmega328), DC

Design and Implementation of a Vehicle To Vehicle Communication System Using Li-Fi Technology

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Abstract— Vehicle to vehicle communication are advanced applications which provide various services to facilitate road safety and traffic management. This system uses wireless communication system which provides warning signals In order to reduce road accidents and congestions. This system improves the efficiency of driving by enabling the vehicles to communicate accident related messages. This also assists the driver to take the proper decision and avoid collision. This paper deals with the vehicle to vehicle communication using Li-Fi (light fidelity). The proposed system uses Li-Fi technology comprising mainly light-emitting diode (LED) bulbs as means of connectivity by sending data through light spectrum as an optical wireless medium for signal propagation. The usage of LED eliminates the need of complex wireless networks and protocols. Vehicle's speed can be controlled by the switch using PWM concept. Hence multiple information can be communicated with the other vehicle efficiently.

Keywords— LI-FI, LED, visible light communication (VLC)

I. INTRODUCTION

Nowadays since the number of vehicles is increasing, the deaths/disabilities are also increasing due to tremendous number of accidents. This system reduces the above complications by providing a warning messages to driver so that the driver can take alternative precautions. This is achieved using LI-FI technology.

Li-Fi

Light Fidelity (Li-Fi) is a bidirectional, high-speed and fully networked wireless communication technology similar to Wi-Fi. The term was coined by Herald Haas and is a form of visible light communication and a subset of optical wireless communications (OWC) And could be a complement to RF communication (Wi-Fi or cellular networks), or even a replacement in contexts of data broadcasting. It is wire and UV visible-light communication or infrared and near-ultraviolet instead of radio-frequency spectrum, part of optical wireless communications technology, which carries much more information and has been proposed as a solution to the RF-bandwidth limitations. Transfer of data from one place to another is one of the most important day-to-day activities. The current wireless networks that connect us to the internet are very slow when multiple devices are connected. As the number of devices that access the internet increases, the fixed bandwidth available makes it more and more difficult to enjoy high data transfer rates and connect to a secure network.

But, radio waves are just a small part of the spectrum available for data transfer. A solution to this problem is by the use of Li-Fi. Li-Fi stands for Light-Fidelity. Li-Fi is transmission of data through illumination by taking the fibre out of fibre optics by sending data through an LED light bulb that varies in intensity faster than the human eye can follow.

Li-Fi is the term some have used to label the fast and cheap wireless communication system, which is the optical version of Wi-Fi. Li-Fi uses visible light between 400 THz (780 nm) and 800 THz (375 nm) as optical carrier for data transmission and illumination instead of Gigahertz radio waves for data transfer. It uses fast pulses of light to transmit information wirelessly.

The data can be encoded in the light by varying the flickering rate at which the LEDs flicker on and off to generate different strings of 1s and 0s.The LED intensity is modulated so rapidly that human eye cannot notice, so the light of the LED appears constant to humans.

Cost-Efficient Solar Based Multipurpose Crop Cutting Machine

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Abstract— This project is aimed to develop crop cutter machine that works towards reducing manpower as well as saving electricity through the utilization of solar energy. In this project the conversion of solar energy to mechanical energy will be attempted. Extend the concept of solar technology on solar crop cutting as energy alternate device. In addition, a prototype of the proposed system is to be implemented. Finally, functionality of the prototype in terms of crop cutting effectiveness is to be tested.

I. INTRODUCTION

As today‘s world is in constant need for energy as well as the increasing in environmental concern, non-renewable alternatives use as well as polluting fossil fuels has to be carefully investigated. A good alternative would be renewable energies such as solar energy. Solar energy can be implemented in various fields, however for the purpose of this project the discussion would be only with regards to using it for crop cutter machines as it is the device being fabricated. Nevertheless, when utilizing solar energy instead of gasoline in powering crop cutters the gained advantage would be mainly ecological. It is rather inconvenient to operate crop cutters with a standard motor powered as it generates noise pollution because of the loud engine sound, and local air pollution because of the engine combustion. In addition, a motor powered engine needs recurrent maintenance like changing oil of the engine. Even though electric crop cutters carry less environmental pollution however they still carry some hazardous issues in addition to not being easy to utilize. Moreover, if the electric crop cutter is corded, cutting could be problematic and dangerous. To solve this issue a solar based crop cutting machine is to be fabricated with the ability of mowing a lawn by itself after getting programmed

II. PROPOSED SYSTEM

The solar crop cutter working principle is having panels fixed in a specific arrangement in such a way that it can obtain from the sun solar radiation with high intensity easily.These solar panels are used to convert solar energy to electrical energy. The resulting electrical energy is stored in batteries through utilizing solar charger. The solar charger
main function is maximizing current from the panels while batteries are charging, and when batteries are fully charged it disconnects the solar panels and reconnects panels when batteries charging are low. The motor is linked to the batteries using connecting wires. Breaker switch is added between these two mechanical circuits basically it starts and stops motor operations.The solar powered crop cutter designed contains DC motor, control switch, solar panel, a stainless steel blade and a rechargeable battery.Cutting is accomplished through utilizing DC motor which offers the needed torque to drive the stainless steel blade which is coupled directly to the D.C motor shaft.The solar powered crop cutter is operated using the switch on the board which switches the circuit off and permits the current flow to the motor which drive the moving blade. Using solar charging controller the battery recharges.

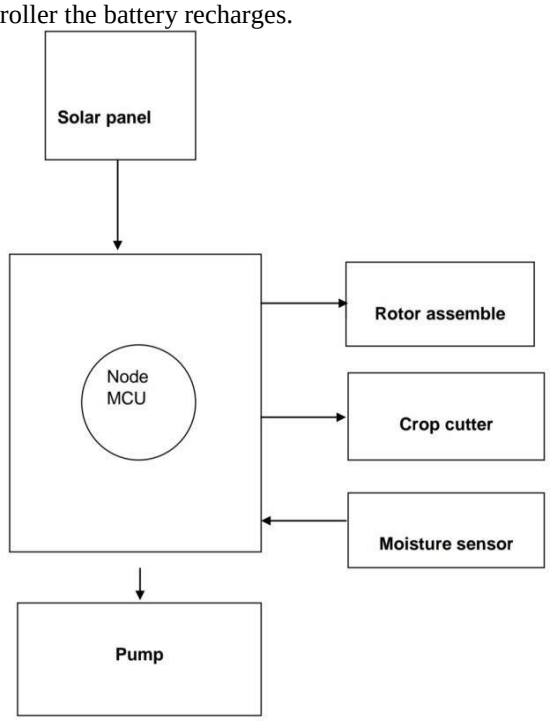

Fig 1. Block Diagram Of Proposed System

III. HARDWARE AND SOFTWARE REQUIREMENTS

Hardware:

- Node MCU
- Blades
- Moisture sensor
- Battery
- DC Motor
- Solar Panel
- Sprinkler

Brain tumor detection in MRI images using MAT lab

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[1][2][3][4] Student, department of ECE , RRIT
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Abstract— Image segmentation is one of the most challenging techniques in the area of medical image processing. The brain tumor detection is emerging in this field. This paper refers to the detection of brain tumor from MRI images using the interface of GUI in matlab.

I. INTRODUCTION

Due to irregular development of cells inside the brain, people are influenced by brain tumors severely. This bug can be dangerous because it can disturb legitimate mind work. Two types of cerebrum tumors have been distinguished as benign tumors and malignant tumors. Generous tumors are more secure than threatening tumors. This is explained by the fact that dangerous tumors are quick creating and destructive while favorable are moderate developing and less harmful. Medical imaging system is used to make visual portrayal of inside of the human body for restorative purposes and noninvasive potential outcomes can be analyzed by this innovation. Magnetic Resonance Imagine 0(MRI) is significantly utilized and it gives more prominent differentiation pictures of the mind and dangerous tissues. On the other hand, image processing is a process where the image gets analyzed and processed intensively .Image processing is one of the branches of computer sciences .It is interested in performing operations on images in order to improve them according to specific criteria or extract some information from them .There are some steps that need to be taken into account to assure image processing. The idea developed in this work can make MRI image processing and

II. RELATED WORK:

Praveen Amritpal Singh proposed algorithm is a combination of SVM and fuzzy c means a hybrid technique for prediction of brain tumour. Fuzzy c means clustering is used for image segmentation. Grey level run length matrix is used for extraction of the feature. Linear, Quadratic, SVM technique is applied to classify the brain MRI images. Real data set of 120 patients MRI images have been used to detect `tumour' and `non tumour' MRI images. The SVM classifier is trained is trained using 96 brain MRI images ,after that 24 brain MRI images we used for testing the trained SVM. SVM

tumor detection process faster and cheaper presenting an optimal solution of the tumor detection. To avoid the different kinds of noises presenting in the first part, we will compare between some types of filter and then select the best to continue using the morphological operators to extract tumor.

classifier with Linear, Quadratic kernel function give 91.66% 83.33% accuracy respectively.

Atsina mina, Prof. Chandrakant Mahobiya in 2017 proposed an effective automatic classification method for brain MRI on the dataset of 50 MRI images is projected using Ad boost machine learning algorithm. The proposed system consists of 3 parts Preprocessing Feature extraction and classification. Preprocessing has removed noise in the raw data, it transform RGB image into gray scale, median filter and thresholding segmentation is applied. For classification boosting technique is used. It gives 89.90% accuracy and result in normal brain or in malignant or benign type of tumor.

III. METHODOLOGY

These are the steps performed on MRI image of brain tumor using MATLAB Algorithms.

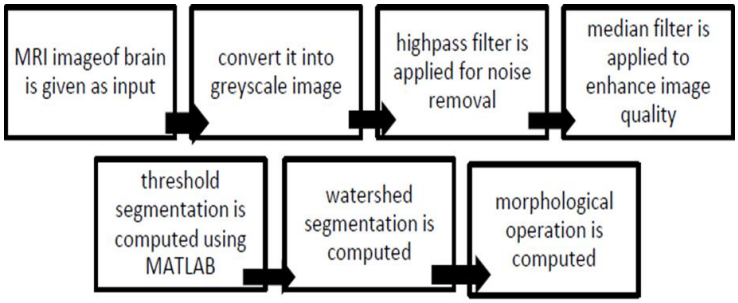
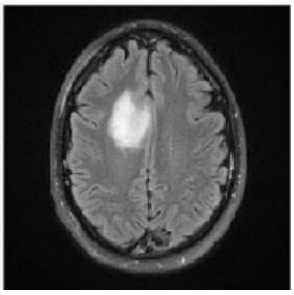


Figure 1. System Level Block Diagram

INPUT MRI IMAGE:



The first stage i.e. the image acquisition stage which starts with taking a collection of images froing the database.

Arduino Based Patient Health Monitoring System using Internet of Things

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Abstract— The main focus of this project is to implement a prototype model for the real time patient monitoring system. The proposed project is used to measure the physical parameters like body temperature, heart beat rate and ECG of the patient with wireless communication technology. In this system, the patient health will be monitored and the data which is collected is transmitted to Wifi wireless networks. Arduino Nano embedded processor supports for analysing the input from the patient and the results of all the parameters will be stored in the database. The proposed system uses ECG sensor, heart beat sensor and temperature sensor to measure the physical parameters of the patient. Arduino controller controls the complete operations of the proposed system. If the abnormality is sensed then an alert message will be sent to the concerned ward through GSM.

Keywords: Arduino Nano, ECG Sensor, Heartbeat sensor, Temperature Sensor.

I. INTRODUCTION

Nowadays Wireless Sensor Network (WSN) plays an important role in the field of research, which results in the development of various smart sensing systems. New research is focusing at improving the quality of human life in terms of health by designing and fabricating sensors which are in contact with the human body directly or indirectly. Health monitoring is an informal, non-statutory method of surveying our workforce for symptoms of ill health, including the back pain. This type of occupational health management system will enable us as an employer, awareness of health problems and its prevention is very much important. Another important role of health monitoring is to give feedback into a system that reviews the current control methods in a place. In addition, there are specific regulations dealing with manual handling and whole body vibration in the workplace. To ensure the duties under these regulations one should refer the HSE (health system engineering) guidance, if manual handling or whole body vibrations are at risks in their workplace.

The development of biomedical engineering is responsible for improving healthcare diagnosis, monitoring and therapy. The novel idea behind the proposed health line is to provide quality health service to everyone. This idea is driven by the vision of a cable free biomedical monitoring system. On-body sensors monitor the vital parameters (ECG, temperature and heart beat rate) and transmits the data to the doctor via wireless communication network. Periodic health monitoring allows people to discover and treat health problems early, before they have consequences. Especially for risk patients and long term applications, such technology offers more freedom, comfort and opportunities in clinical monitoring.

II. LITERATURE SURVEY

[1] Microcontroller based system which sends the text message to the mobile phone. When the readings are not normal or increased beyond the threshold level, the device sends the report of patient's health condition along with the location to the caretaker's phone. [2] This system is designed to monitor health parameters. Data is collected from the sensors which are connected to the arduino and the data is uploaded to the web page through the internet. [3] Here, four layers namely, sensor layer, network layer, internet layer and service layer are used. Data is collected from the sensors and data communicated with the help of different protocols and stored in the cloud.[4] Credit card sized minicomputer is placed beside the patient's bed with power and results can be seen on the screen of computer which is in the same area network. It provides readings of body temperature and heartbeat. The detected values will be uploaded on the webpage.[5] System monitoring of ECG wave using panda board is proposed which is connected to the Ethernet for internet connection. Health parameters like body temperature, heart rate and ECG can be measured.

III. METHODOLOGY

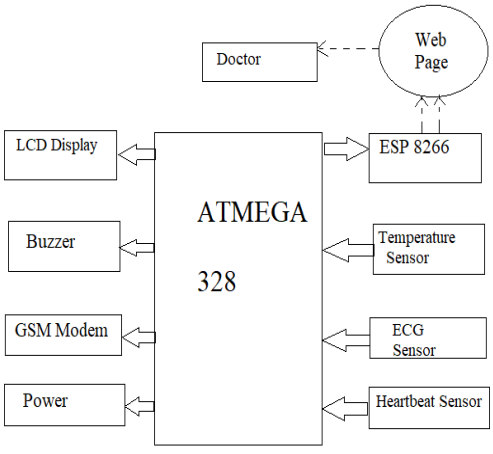

Fig.1 Block diagram of proposed system

Intelligent Accident Detection and Ambulance Rescue System

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Divya.T.M, Assistant professor, RRIT, Bangalore

Abstract:--

Road accidents and traffic congestion are the major problems in urban areas. Currently there is no technology for accident detection. Also due to the delay in reaching of the ambulance to the accident location and the traffic congestion in between accident location and hospital increases the chances of the death of victim. There is a need of introducing a system to reduce the loss of life due to accidents and the time taken by the ambulance to reach the hospital. To overcome the drawback of existing system we will implement the new system in which there is an automatic detection of accident through sensors provided in the vehicle. A main server unit houses the database of all hospitals in the city. A GPS module in the concerned vehicle will send the location of the accident to the main server which will rush an ambulance from a nearest hospital to the accident spot. Along with this there would be control of traffic light signals in the path of the ambulance.

This will minimize the time of ambulance to reach the hospital. A patient monitoring system in the ambulance will send the vital parameters of the patient to the concerned hospital. This system is fully automated, thus it finds the accident spot, controls the traffic lights, helping to reach the hospital in time.

Intelligent Covid-19 Pandemic Bus Service with Safety Measures

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Abstract— This paper depicts the intelligent covid-19 pandemic bus service with safety measures. Many will travel from one place to other for their work by the means of public transportation. In this case, the government needs to take more precautions by finding out the infected people along with that they need to avoid the spreading of the virus. This paper will make a good impact on finding out the people who are having the primary symptoms and follows the WHO rules. In this paper, the main focus is to find the people who are close to the infection by checking their temperature automatically, along with this the counter will be there to keep a count of people who is boarding and de-boarding the bus. so that the passengers get to know that whether there are empty seats on the bus or not. In addition to this, the sanitization process will be carried out for each passenger automatically before entering the bus.

Keyword: temperature, sanitization, counter

I. INTRODUCTION

The COVID-19, an acronym for "Coronavirus Disease-2019", is a respiratory illness caused by the severe acute respiratory syndrome coronavirus (SARS-CoV-2), a contagious virus belonging to a family of single-stranded, positive-sense RNA viruses known as coronaviridae. Much like the influenza virus, SARS-CoV-2 attacks the respiratory system and causes ailments such as cough, fever, fatigue, and breathlessness. While the exact source of the virus is unknown, scientists have mapped the genome sequence of the SARS-CoV-2 and determined it to be a member of the β -CoV genera of the coronavirus family, which typically derives its gene sources from bats and rodents. The COVID-19 was first reported to affect human life in Wuhan City, in the Hubei province of China in December 2019. Since then, the COVID-19 has spread like wildfire throughout the rest of the world, marking its presence in 213 countries and independent territories. COVID-19 statistics for the worst affected countries and regions of the world have been presented in Fig1. According to the WHO, the current global tally of confirmed coronavirus cases stands at 65.2M while the death toll has reached 1.51M. The rapid rise in the number of COVID-19 incidents worldwide has prompted the need for immediate countermeasures to curb the catastrophic effects of the COVID-19 outbreak.

The Government authorities and stakeholders need to work out a Module so that the public transport bus can go on to continually serve and be a sustainable part of the city life. What it needs at this juncture is for organizations promoting sustainable mobility to hold its back. Otherwise, the consequences of a fall in revenue due to limited service and ridership can seriously hinder meeting the mobility and connectivity needs of the people residing in the Metropolitan Area – having a deep impact on the lives of people and the state economy.

As the whole world is suffering from covid-19, the scientists are busy finding out the vaccines. It's time for us to take precautionary measures, our project aims at providing safety measures for passengers riding on a bus has instilled confidence among riders.

Figure 1: Covid-19 Statistics

II. LITERATURE SURVEY

Wellsprings of measurements for the writing overview had been many, anyway the significant assets are reports, diaries, net, magazines and records. As the set of experiences for executing the mission required a skill of installed gadget, it likewise includes the investigate Arduino IDE for programming the product program to unique sensors utilized and Arduino Nano board.

Non-Contact Temperature Reader with Sanitizer Dispenser (NCTRSD) A research paper, Non-Contact Temperature Reader with Sanitizer Dispenser (NCTRSD) [1], via Marlon Gan Rojo, Jolan Baccay Eunelfa Regie Calibara, Alain Vincent Comendador, Wubishet Degife, Assefa Sisay helped us to realize more about Temperature studying without a bodily contact and automated sanitizer dispenser.

This device is supposed to assist prevent the unfold of SARS-CoV-2 infection and help in preserving and/or enhancing community health and reducing the negative impact of the contamination on the economy and society.

The hardware components used are:

Smart Indoor Vertical Farming Using IoT

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[1] Electronics And Communication Engineering, R.R Institute of Technology, Bangalore

Abstract— Vertical farming is the practice of producing food in vertically stacked layers or in vertically inclined surfaces in which plants are grown in a controlled environment. The proposed system uses the concept of IOT (Internet of Things) and is much more efficient. The indoor vertical farming environmental parameters are continuously sensed using various sensors and the collected data is displayed on a customized website. Thus, the indoor vertical farming can be monitored from anywhere and at any time. Basic functions like detecting the soil moisture, temperature, humidity are performed. Artificial photosynthesis for the plants using grow-lamps and also drip irrigation is implemented to maintain the urban gardens. GSM provides systematic alerts regarding the status of garden to the user at regular intervals of time. An android app interface is used to remotely control the garden functioning encouraging the smart way of agriculture.

I. INTRODUCTION

Agriculture has been one of the primary occupations of man since early civilizations and even today manual interventions in farming are inevitable. The world's population is expected to reach around 9.7 billion by the year 2050. The overall food production will need to increase by 50% of the current rate. A indoor vertical farming is mainly used to grow more plants in less space because mass urbanization and land degradation has resulted in diminishing of agricultural land. The issue is that there is a lack of space in the Urban areas. At present most of the indoor vertical farming are manually controlled and monitored. This paper proposes a system to monitor and automatically as well as manually control the system in indoor vertical farming using temperature sensor, humidity sensor, light intensity sensor and soil moisture sensor.
If the sensed data crosses a predefined threshold range an alarm will be triggered which will alert the user. This method of indoor vertical farming monitoring is labour intensive and time consuming. Urban gardens are needed to be turned into intelligent, independent and productive spaces. The technology proposed will not only benefit the urban agriculture, but also will help the rural agriculture to enhance the efficiency in a smart manner.

II. PROPOSED SYSTEM

This proposed system aims at reducing the human interference thus also reducing the error and the wastage of resources. In this all the required actions are automated because of which the farmer can take the required action from a remote location itself. The existing systems though they had numerous features had failed to bring certain new implementations. Hence to overcome the drawbacks of the existing system, collaboration of new technologies is undertaken. The proposed model analyses the home gardening, collecting data through sensors & respected outputs are obtained. This model is also automated using IoT model & controlled through an app in the mobile phone.
Following are the main objectives of the proposed system:
Design and develop a microcontroller based sensor interfacing for reading a soil parameters.
Build a interface between LCD and microcontroller to show the sensor readings.
Converting the sensor value using ADC port of microcontroller.
• Sending all reading to mobile serial port using Wi-Fi module and microcontroller UART port.
Use of android mobile application for displaying real time soil status.
• Establishing the cloud server connectivity in order to store all soil test records over server with time.
The outline of proposed block diagram is shown in Fig:1 and brief explanation about each hardware components used is discussed. This chapter also lists the hardware components and software tools required.

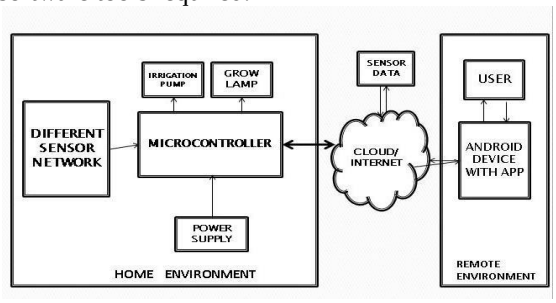

Fig:1.Block Diagram of the Proposed System

III. HARDWARE AND SOFTWARE REQUIREMENTS

Hardware:

- Microcontroller
- Vertical Garden frame
- Soil moisture sensor
- Humidity sensor
- LCD
- Grow lamps
- Pump with drip irrigation
- Wi-Fi module

Software

- Arduino IDE
- Flash Magic

Wireless Charging of Electric Vehicle in Smart Cities

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Abstract:--

Currently, we are facing issues related to lack of fuel. So, we are moving towards electrical vehicle. But still people are not ready to prefer electrical vehicle over present ones. It is because of price as well as lack of available charging stations. Even if few charging stations are available, it is necessary to spend extra time for charging the vehicle. The vehicle battery charger station using renewable power system developed in this work provides a unique service to the traveler. It can be quickly and easily installed outside any business premises.

The application of Internet of Things (IoT) has been emerging as a new platform in wireless technologies primarily in the field of designing electric vehicles. To overcome all issues in existing vehicles and for protecting the environment, electric vehicles should be introduced by integrating an intellectual device called sensor all over the body of electric vehicle with less cost. Therefore, this article confers the need and importance of introducing electric vehicles with IoT based technology which monitors the battery life of electric vehicles. Since the electric vehicles are implemented with internet, an online monitoring system which is called Things Speak has been used for monitoring all the vehicles in a continuous manner (day-by-day).

Conversion of Waste Heat into Electricity Using Teg

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[1][2][3] Student, EEE Department, RRIT, Bengalore, VTU University.
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Abstract— Even the most efficient power plants convert only about 40% of energy they produce into electricity and the combustion engine used in most vehicles are even worse, yielding only about a third of their energy as usable power. Recent development of material science, nanotechnology have hinted at a new class of energy harvesting devices thermoelectric generators (TEG) small enough to trap waste heat from even the smallest household appliances and to turn that heat into electricity. Small thermoelectric generators could be placed around the exhaust system of the car and the exhaust waste heat is utilized to charge the battery of the car and these thermoelectric generators are attached to a stove so that while cooking the food the battery can be charged and can run the emergency lights. These small thermoelectric generators cannot be connected directly to the battery as the power generated is not constant, if the power generated from the TEG is low to charge the battery; a boost converter is required in between the TEG and the battery. The output of the boost converter is greater than the input hence enough power is boosted through the converter for the charging of battery. The research has been going on to improve the efficiency of TEG's. The main achievement until obtained from the TEG's is harvesting the power from the waste heat from exhaust pipe of a BMW car to charge its battery. This technology is fixing for some of its applications because of its cost. This project will be done to apply this technology for home appliances. The heat from the candle is taken as heat source for the TEG's to run the load. We all know that the efficiency of TEG's is so small; this project also explains how we can improve the efficiency

Keywords: Renewable energy sources, nanotechnology, TEG, boost converter.

I. INTRODUCTION

Many nations count on coal, oil & Natural gas to supply most of their needs, but these are all a finite resource. Eventually the world will run out of fossil fuels, or it will become too expensive to retrieve those that remain. Renewable energy resources such as wind, solar & hydro power offer clean alternatives to fossil fuels. They produce little or no pollution or greenhouse gases & they will never run out. Most renewable energy comes either directly or indirectly from the sun, sunlight or solar energy can be used directly for heating and lighting homes & other buildings, for generating electricity & for variety of commercial & industrial uses. The sun's heat also drives the wind, whose energy is captured with wind turbines. These wind & sun's energy causes water to evaporate which causes rain & this flowing kinetic energy is used as hydroelectric power. Biomass can be used to produce electricity, as a transportation fuel or chemicals, this is called bio energy. Ethanol is also used as a fuel with gasoline which is replacing gasoline now days. Geothermal energy taps the earth's internal heat for a variety of uses including electric power production. In addition to tidal energy ocean energy which are driven by both the tides and the winds.

One disadvantage with renewable energy sources is that it is difficult to generate the quantities of electricity that are as large as those produces by traditional fossil fuel generates & its reliability of supply. Renewable energy often relies on weather for its source of power.

II. THERMOELECTRIC GENERATORS (TEG), DC-DC CONVERTERS

TEG is an acronym for 'thermoelectric generator'. A TEG is a device utilizing one or more thermoelectric modules as the primary component, followed by a cooling system that can be either passive or active. Such as an open air heat sink, fan cooled heat sink, or fluid cooled. These components are then fabricated into an assembly to function as one unit called a TEG.

A. Background of Thermoelectric generators

Metals are good conductors because electrons can move freely with in them similar to a fluid full of water and you raise one end, what happens? The water will flow down the pipe from the high end to the low end. This is because when you raised the pipe you increased the potential energy and the water wants to flow downhill. In a thermoelectric material the same thing happens to the fluid like electrons when you heat it. Heating one end a thermoelectric material causes the electrons to move away from the hot end toward the cold end. When the electrons go from the hot side to the cold side this causes an electrical current. The larger the temperature difference the more electrical current is produces and therefore more power generated. Thermoelectric power is the conversions of a temperature differential directly in to electrical power results primarily from two physical effects; the see beck effect & peltier effect. The see beck effect named after Thomas. J. Seebeck, who first discovered the phenomenon in 1821. See beck noticed that when a loop comprised of two dissimilar materials was heated on one side an electromagnetic field (EM) was created. He actually discovered the EM field directly with a compass. He noted that the strength of the electromagnetic field and therefore the voltages is proportional to the temperature difference between the hot & cold sides of the material. The magnitude of the see beck co-efficient (S) varies with material and temperature of operation. The see beck coefficient is thus defined as

$$S = -\Delta V/\Delta T \qquad (1)$$

Radar System Using Arduino and Ultrasonic Sensor

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Abstract— This paper is about Radar System controlled via Arduino. This RADAR system consists of an ultra-sonic sensor and servo motor; these are the major components of the system. Basic working of the system is that it has to detect objects in its defined range. Ultra-sonic sensor is attached to the servo motor it rotates about 180 degrees and gives visual representation on the software called processing IDE. Processing IDE gives graphical representation and it also gives angle or position of the object and distance of the object. This system is controlled through Arduino. Arduino UNO board is sufficed to control ultrasonic sensor and also to interface the sensor and display device. On our research, we learned about existing navigation and obstacle detection innovations and different systems where ultrasonic sensors are used efficiently. Main application of this RADAR system comes into different field of navigation, positioning, object identification, mapping, spying or tracking and different applications. These less investment system are also suitable for indoor applications.

Keywords— Arduino, ultra-sonic, radar, positioning, surveillance, obstacle detection.

I. INTRODUCTION

RADAR system is an object detection or tracking system which uses radio waves to decide or get the range, height, heading, or speed of items or objects. Radar frameworks or system arrive in an assortment of sizes and have distinctive performance particulars. Some radars are utilized for aviation authority at air terminals and others are utilized for long range observation and early cautioning frameworks [1]. There are some ways to show radar working data. There are also some modified radar systems which have advance technology of handling the systems. These modified systems are used at higher levels to get or extract the helpful or important data [2]. Our proposed system's working principle is linked by the following components which are is ultra-sonic sensor connected to the microcontroller (we have chosen Arduino) digital input and output pins. Then we have servo motor which is also connected to digital output and input pins. Our both main components ultra-sonic sensor and servo motor are connected simultaneously so that when our servo motor rotates from 0 degree to 180 degree from extreme right to extreme left the motor will rotate nearby its axis [3]. We utilize Computer screen to demonstrate the data (distance and angle) through software called "Processing development Environment".

II. LITERATURE SURVEY

Subsequent to experiencing a portion of the papers with respect to usage utilizing ultrasonic sensors and ARDUINO, it was found that this idea is searched a lot and is a mainstream idea which is still in advance. The advances utilized were not just productive and solid yet in addition financially achievable [5]. Not only this, here other very useful applications of ultrasonic sensors were observed too This paper discusses about a monitoring system which is designed measure to volume of water, then all the water will submerge with land and this phenomenon is called as flood or surge. We can overcome this flood problem by earlier identification in height of water and observing speed. If we identify problem earlier we can overcome this problem before it become crisis. By accuracy of 96.6%. But when it is implemented in the rivers there are many errors because of different type of water levels due to heavy waves and speed of water and also due to floating of heavy objects. Unlike Previous testing results, author directed this analysis on tracking of speed of water improvement or modification and level of water in flooding. The test was completed when the Arduino used as controller of application. For more research, information of depth level and speed of water of this system will be sent to database server website to be checked regularly [8].

An intelligent driver monitoring and vehicle control system is introduced in this research. This technology is creating to avoid accidents by monitoring the driver's activities. The writer states some of the main reasons of accidents today. These are alcohol consumption by the driver, carelessness, drowsiness or medical illness. The various units in the framework, including motors, relays, power unit and ESP8299 module are tried and are observed to be in working condition. Ultrasonic sensor is utilized to alarm the driver if any vehicle draws close to his vehicle. The status of the driver can be observed by the assistance of sensors executed in the vehicle and the subtle elements are refreshed to the proprietor. This system overcomes all the different aspects due to which other technologies designed for this purpose have failed, making the system more useful, efficient and less costly and less time consuming [7]. In this research paper authors have given information about the detection of radio waves and tracking or ranging through radar set which is built from components like an ultra-sonic sensor, a servo motor and an Arduino. The author discuss about the linear measurement problem because of which distance

Three Phase Power Failure Detector and Voltage Measurement Using Arduino

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Abstract— Three phase power failure preventor is a device which used in detection of power failure in 3 phase power supply. It is a device where the user would be acknowledged that one of the phase has been failed. This would be known to the user as the circuit trips off the power supply, in other system the detection would be presented with leds or buzzer. Three phase power failure prevention using microcontroller is the device where supply would provided to relays using transformers and rectifier circuit. And the controller we are using in proposed system is aurdino nano, the power supply to the controller would be given by using power supply. For displaying fault messages we are making use of 16*2 lcd display. Initially the circuit will be working fine and there would not be any fault messages in the display as there is no failure of any phases. Once any one of these phases fail, the controller detects this failure and with the help of relays the circuit is turned off. Now the failure message displays on lcd display and only particular phase needs to be corrected and circuit will be working fine.

Keywords— WSN, IoT, WI-FI, fire alarm, ESP32, RF module, real-time.

I. INTRODUCTION

The Three phase power failure preventor using microcontroller is protection machine/circuit which prevents dangers taking place, as we all know there will be three phases in a power supply phase, neutral and earthing connections, the normal power phase preventor just trips the phase and user would not know, but in proposed system we would be having a lcd display where we will be getting to know which phase has been failed. Also, in our proposed system as the process is automated by using microcontroller risk is reduced and it becomes easier for the detection and operation processes. In village areas farmers will be using motors for water supply purpose which would be using 3 phase power supply for their operation. This can be overcome by implementing the proposed system in the circuit. Three phase power failure preventor is a device which used in detection of power failure in 3 phase power supply. It is a device where the user would be acknowledged that one of the phases has been failed. Sometimes even if there are some faults in the phase connections the motor still run which in turn results in device get damaged or even failed. This can be overcome by implementing the proposed system. This would be known to the user as the circuit trips off the power supply, in other system the detection would be presented with LEDs or buzzer. Three phase power failure prevention using microcontroller is the device where supply would provide to relays using transformers and rectifier circuit. And the controller we are using in proposed system is Arduino nano, the power supply to the controller would be given by using power supply. For displaying fault messages, we are making use of 16*2 Iced display. Initially the circuit will be working fine and there would not be any fault messages in the display as there is no failure of any phases. Once any one of these phases fail, the controller detects this failure and with the help of relays the circuit is turned off. Now the failure message displays on Led display and only particular phase needs to be corrected and circuit will be working fine.

II. MICROCONTROLLER

Arduino nano is an open-source firmware and development kit that helps you to prototype or build [OT product. It includes firmware which runs on the where the user would be acknowledged that one of the phases has been failed. Sometimes even if there are some faults in the phase connections the motor still run which in turn results in device get damaged or even failed. This can be overcome by implementing the proposed system. This would be known to the user as the circuit trips off the power supply, in other system the detection would be presented with LEDs or buzzer. Three phase power failure prevention using microcontroller is the device where supply would provide to relays using transformers and rectifier circuit. And the controller we are using in proposed system is Arduino nano, the power supply to the controller would be given by using power supply.

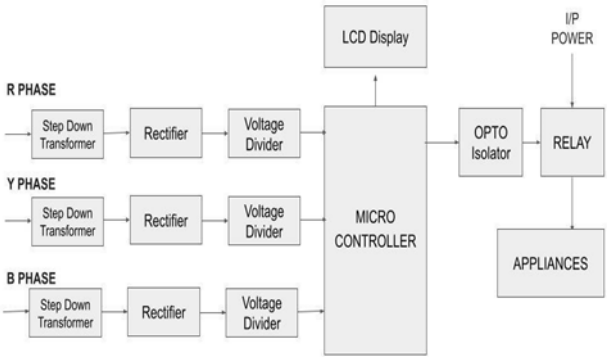

Fig.1: Block diagram

For displaying fault messages, we are making use of 16*2 Iced display. Initially the circuit will be working fine and there would not be any fault messages in the display as there is no failure of any phases. Once any one of these phases fail, the controller detects this failure and with the help of relays the circuit is turned off. Now the failure message displays on

High Speed Data Transmission Using Light Fidelity

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Abstract— Current era many people are using internet to accomplish their task through wired or wireless network. As no of users get increased in wireless speed decreases proportionally. Though Wi-Fi gives us speed up to 150mbps as per IEEE 802.11n, it is still insufficient to accommodate no of users. To remedy this limitation of Wireless Fidelity, we are introducing concept of Li-Fi. As per germen phycist Harald Haas data through illumination taking the fibber out of fiber optic by sending data through an LED light bulb that varies in intensity faster than the human eye can follow. It's the same idea band behind infrared remote controls but far more powerful. Haas says his invention, which he calls D-LIGHT, can produce data rates faster than 10 megabits per second, which is speedier than your average broadband connection.

Index Terms— Wi-Fi, Light-emitting diode (LED), Video LAN Client (VLC), Technology, Entertainment and Design (TED), Visible Light, Data utilization, server, lamp driver.

I. INTRODUCTION

Li-Fi, as coined by Prof. Harald Haas during his TED Global talk,[1]is bidirectional, high speed and fully networked wireless communications similar to Wi-Fi. Li-Fi is a subset of optical wireless communications (OWC)and can be a complement to RF communication (Wi-Fi or Cellular network),or are placement in contexts of data broadcasting. It is wireless and uses visible light communication or infra-red and near ultraviolet (instead of radio frequency waves) spectrum, part of Optical wireless communications technology, which carries much more information, and has been proposed as a solution to the RF-bandwidth limitations. A complete solution includes an industry led standardization process. Light Fidelity is an wireless communication technology which enables a wireless data transmission through LED light. Light Fidelity is based on a unique ability of solid state lighting systems to create a binary code of 1s and 0s with a LED flickering that is invisible for human eyes. Data can be received by electronic devices with photodiode[3]within area of light visibility. This means that everywhere where LEDs are used, lighting bulbs can bring not only. The light but wireless Connection at the same time. With increasing demand for wireless data,lack of radio spectrum and issues with hazardous electromagnetic pollution, Light

Fidelity appears as a new greener, healthier and cheaper alternative to WiFi. The term was first used in this context by Harald Haas in his TED [4] Global talk on Visible Light Communication. The technology was demonstrated at the 2012 Consumer Electronics Show in Las Vegas using a pair of Casio smart phones to exchange data using light of varying intensity given off from their screens, detectable at a distance of up to ten meters. In October 2011 a number of companies and industry groups formed the Light Fidelity Consortium, to promote high-speed optical Wireless systems and to overcome the limited amount of radio based wireless spectrum available by exploiting a completely different part of the electromagnetic spectrum. The consortium believes it is possible to achieve more than 10 Gbps, theoretically allowing a high-definition film to be downloaded in 30 seconds. Li-Fi has the advantage of being able to be used in sensitive areas such as in aircraft without causing interference. However, the light waves used cannot penetrate walls [5].Later in 2012, Pure VLC, a firm set up to commercialize Li-Fi, will bring out Li-Fi products for firms installing LED-lighting systems. Moreover Li-Fi makes possible to have a wireless Internet in specific environments (hospitals, Airplanes etc.) where Wi-Fi is not allowed due to interferences or security considerations. gives nice opportunities for transmitted data. ―It is possible to encode data in the Light by varying the rate at which the LEDs flicker on and off to give different strings of 1s and 0s. The LED intensity is modulated so rapidly that human eye cannot notice, so the output appears constant. More sophisticated techniques could dramatically increase VLC data rate. Terms at the University of Oxford and the University of Edinburgh are focusing on parallel data transmission using array of LEDs,where each LED transmits a different data stream. Fig2: Haraldhaas Other groups are using mixtures of red, green and blue LEDs to alter the light frequency encoding a different data channel. The Li-Fi Consortium is an international platform focusing on optical wireless Technologies. It was founded by four Technology based organizations in October 2011.In technical terms, LI-FI is a light communication system that is capable of transmitting data at high speed over the visible, ultraviolet infrared spectrums. In its present states only LED lamps can be used for the transmission of data in visible light. In terms of its end use, the technology is similar to WI-FI, the key technical difference being that WI-FI uses radio frequency to induce a voltage in an antenna to transmit data, whereas LI-FI uses the modulation of light intensity to transmit data. LI-FI can theoretically transmit at speed of up to 100Gbits/s.

II. LITERATURE

The most of the people are using Wi-Fi Internet devices, which will be useful for 2.4-5GHz RF to deliver wireless Internet access surrounded our home, offices, schools, and

EEG data processing for Emotion detection using DTCWT and FFNN Architecture Design

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Abstract— Emotion detection and classification algorithms developed are based on wavelet features and neural network approaches which hare limited to software implementation only. Very little literature is reported on hardware implementation of EEG detection and classification approaches. One of the major challenges in hardware implementation is the computation complexity of DWT processor and FFNN architecture. In this paper, architectures for data path operation of both DWT and FFNN structures are designed and are implemented on FPGA platform. A low power and high speed architectures for DTCWT and neural network are designed based on customized systolic array logic and reusable data path circuitry respectively. The nine-stage DTCWT architecture designed is designed to work at maximum frequency of 322 MHz consuming less than 0.71 W of power. The FFNN structure is designed to operate at maximum frequency of 321 MHz consuming less than 2.2 W of power. Both of the architectures are suitable for real time EEG data processing.

Index Terms— DTCWT, Emotion detection, FFNN architecture, FPGA platform

I. INTRODUCTION

With complex wavelet transforms demonstrating shift invariance property, EEG signal analysis using Dual Tree Complex Wavelets (DTCWT) has recently gained much importance. In EEG data processing, artifacts that get integrated with EEG recording cause disturbances in accurately extracting features. Due to the complex interconnections between billions of neurons, the recorded EEG signals are complex, non-linear, non-stationary and random in nature, **U.R. Acharya [1]**. Feature based classification algorithm based on neural network approaches rely on input data vector and the intensity levels of feature vectors for accurate classification. The trained network weights and biases that process the input data performs classification of emotions and any deviations in input patterns may lead to unsuccessful in
classification. In addition to artifacts, any movement electrode due to head movement also introduces artifacts.
Further to artifacts, recording of EEG data at different time intervals also lead to variations in event occurrence in EEG. In order to design reliable and invariant system for feature detection and classification, DTCWT is used in place of DWT. In this paper, a detailed discussion on EEG feature detection and classification based on DTCWT and Feed Forward Neural Network (FFNN) is presented. DTCWT is an enhancement to the discrete wavelet transform (DWT). It is a shift invariant and directionally selects two and higher dimensions, **Selesnick Ivan W** [**2].** It achieves a redundancy factor of 2^d for d-dimensional signals,which is lower than the undecimated DWT. The multidimensional (M-D) DTCWT Transform is non separable but is based on a computationally efficient, separable filter bank (FB). The DTCWT of a sign, x(n) is executed utilizing two fundamentally inspected DWT's as a part of parallel on the same information. DTCWT coefficients are non-swaying with an almost move invariant greatness and altogether lessened associating with more directionalities when contrasted with the DWT.Thus is it more efficient in time frequency localization of EEG signal. Similar to the positive or negative post-filtering of real subband signals, the idea behind dual tree approach is quite simple. **Kingsbury N [3]** according to the author, DWT is very sensitive in the translation, it is very less effective in the domain of statistical signal processing. To address the, shift-variance problem a new method is employed by considering two DWT's, one of DWT gives the real part of the transformed co-efficients and the other one gives the imaginary part. By combining the co-efficients of two DWT's into complex-valued co-efficients, a new transform is obtained by the name Dual Tree Complex Wavelet Transform (DTCWT).This new transform has some, characteristic properties including near shift-invariance, better directional selectivity, which is very important in signal processing. **Musa et. al** [**4**], in this study first the features of EEG data are extracted using a dual-tree complex wavelet transformation at different levels of granularity to obtain size reduction and statistical features are extracted. Five statistical features are extracted from new dataset with reduced size and are classified with the help of Complex valued neural networks (CVANNs) using DTCWT in the classification of EEG data. The proposed method is tested using a benchmark of EEG dataset, and high accuracy rates are obtained. The stated results show that the proposed method can be used to design an accurate classification system for epilepsy diagnosis. **R.Y.Yu** [**5**] proposed that DWT is not able to cancel the aliasing, thus resulting in unclearly separated sub-bands. The dual-tree complex wavelet transform (DTCWT) was first introduced by Kingsbury, and he proposed to extract the signal component related to sensory motor rhythms. There are several 1D-DWT architectures the most popular ones are, Direct Mapped Architecture, Folded Architecture, MAC Based Programmable Architecture, Flipping Architecture,

Performance Analysis of Distributed System by the Placement of DG considering Load Growth

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Abstract— Load growth in a system is a natural phenomenon and analysis of load growth is very important to evaluate the future performance of the system. With the increase in load demand, system power loss and voltage drop increases. Placement of Distributed generators (DGs) are one of the best solutions to cope up with the load growth if they are allocated appropriately in the distribution system. In the work planned, the optimal size and location of multiple DGs will be able to satisfy the incremental load on the system and minimization of energy loss without violating system constraints. It is planned that with the penetration of DG in distribution system, there will be a great improvement in several distribution system parameters. Moreover, the loading capacity of distribution system will be enhanced through DG and capacitor placement considering load growth by undergoing detailed analysis. Two test system 33bus and 69bus RDS will be considered to evaluate the result.

Index Terms: Placement of Distributed generators (DGs), Load growth, Minimization of energy loss, Energy demand.

I. INTRODUCTION

Distributed Generator or Decentralized Generation is a small power generator ranging from few Kilowatts to few Megawatts. It can operate stand-alone or in correlation with distribution network but is not dispatchable by a central operator. To maximize DG benefits, DG must be of appropriate size, to be placed at the appropriate location and in appropriate number. Inappropriate capacity of DG may cause higher system power loss. This is because the reverse power flows from larger DG units to the source which results into instability of the system.

Steady increase in energy demand on distribution system due to natural growth of a service territory or through stimulation of energy market is a big challenge to planning engineers so that the system is adaptable without violating service quality. Load growth on system results into either extra expenditure made towards the addition of new substation or expanding the existing substation capacity. Due to Power System Deregulation and environmental concerns as well as technological advancements, the Disco (Distribution Company) planners are forced to investigate expansion planning through alternatives such as Distributed Generation (DG). In this work, a Simple Algorithm is used to find out the DG size and site for catering the load on the feeders without violating the voltage limits of the feeder. Here the objective function is to minimize the Active Power Loss and to reduce Cost of Electricity considering Load Growth. The main contribution of the work deals with the Impacts of following issues with load growth. They are:

1. Increase in load capacity of the distribution system.
2. Multiple number of DG in a distribution network on active power losses.
3. Multiple number of DG on reactive power losses.
4. Cost of Feeder Energy Loss from the transmission network.
5. Total cost of DG.
6. Voltage profile.

II. LITERATURE REVIEW

A rapid rise in load demand, due to the industrial and commercial loads results in voltage problem, draws excessive power and energy loss in the distribution system[1]. The literature on distribution system is very much diversified; the brief review is presented on the subject of DG placement and optimal size and location of multiple DGs are found to cater the incremental load on the system[2] and minimization of power loss without violating system constraints.[3]

III. OBJECTIVE OF THE WORK

The Objective of DG placement is either Active Power Loss minimization or minimization of Cost of Electricity. Moreover, Integration of DG with Active Power Loss minimization with Load Growth is not reported. In this work, Optimal Size and Location for DG/s are computed to solve the problems that arise due to load growth on several power system parameters. Main objective is:

1. To minimize Active Power loss considering load growth with different kinds of DG/s.
2. To minimize Cost of Electricity considering Load Growth.

IV. DISTRIBUTION NETWORK CONFIGURATIONS

Distribution networks are divided into two types, radial or network. A radial system is arranged like a tree where each customer has one source of supply. A network system has multiple sources of supply operating in parallel. The secondary network is commonly found in big cities and is the most reliable system. Spot networks are used for concentrated loads. Radial systems are commonly used in rural or suburban areas.

Radial systems usually include emergency connections where the system can be reconfigured in case of problems, such as a fault or required replacement. This can be done by

Smart Solar Power Management System for Domestic Purpose

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Abstract— The integration of small sized standalone solar systems to the grid is technically complicated resulting into expensive operation which is not affordable to all. As such, this paper will presents a smart controller based design using digital signal processing for cost effective operation of solar-grid tied system. The hybrid system is able to size the connected system and deploy the operation strategy so as to get the effective utilization of solar output. The synchronization is not necessary as this method can be effectively altered by the use of load discretization. This gives cheap, efficient, reliable and cost effective operation. The system has been tested for the 50Watt solar panel with the battery backup storage and its effectiveness will be observed. The battery backup is made to operate during the cut off of Grid or Grid and Solar supply. The performance of the system over the wide range of operation and transient states are assured by practical observation and modification. This system is defined to fill the necessity of regions where solar power is used only as back up purposes to charge the battery and is actively dumped during the presence of active grid. These regions include many parts of the world where grid cut off is common due to the shortage of energy.

Index Terms— Solar Systems, load discretization, Solar panel, SPWM inverter, Dump Power utilization

I. INTRODUCTION

conversion of energy from sunlight into electricity, either directly using photovoltaics (PV), indirectly using concentrated solar power, or a combination. Concentrated solar power systems use lenses or mirrors and solar tracking systems to focus a large area of sunlight into a small beam. Photovoltaic cells convert light into an electric current using the photovoltaic effect. Photovoltaics were initially solely used as a source of electricity for small and medium-sized applications, from the calculator powered by a single solar cell to remote homes powered by an off-grid rooftop PV system.. As the cost of solar electricity has fallen, the number of grid-connected solar PV systems has grown into the millions and utility-scale photovoltaic power stations with hundreds of megawatts are being built. Solar PV is rapidly becoming an inexpensive, low-carbon technology to harness renewable energy from the Sun. The overwhelming majority of electricity produced worldwide is used immediately since storage is usually more expensive and because traditional generators can adapt to demand. Both solar power and wind power are variable renewable energy, meaning that all available output must be taken whenever it is available by moving through transmission lines to where it can be used now. Since solar energy is not available at night, storing its energy is potentially an important issue particularly in off-grid and for future 100% renewable energy scenarios to have continuous electricity availability. The alternative energy is definitely the choice of future energy as the cost of conventional energy and its availability continues to reduce.

II. LITERATURE

1. Krishna Neupane, Amit Rouniyar paper published reviews the existing methods and techniques used for distributing the load across the grid and solar power with the real time operation

2. Christopher B Barth, Thomas Foulkes, Intae Moony, Yutian Leiz, Shibin, Qin Robert C.N. Pilawa-Podgurski had published paper the energy density and quality factor of ceramic capacitors is compared to polyester and polypropylene film capacitors

3. P. Nagalaxmi, M. Veda Chary has proposed a system to distribute the power generated from renewable source efficiently.

4. G. Saravanan, Prakash, K.Dhanapal, M. Gowtham ,P. ArunKumar, KPR had published paper

IoT Based Flood Management and Alerting System

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Abstract— Flooding is one of the major disasters occurring in various parts of the world. n any water system, when there is an increased quantity of water, it causes flooding, like a river or lake overflowing. Flooding is a natural disaster occurs in many countries. Many occasions are responsible for flooding such as heavy rainfall or dam fractures. In case of flooding or dam fractures, it rapidly releases a huge quantity of water and floods the riverbanks and surrounding areas. It causes loss of life and property also. Flood monitoring and alerting systems are helpful for monitoring and to reduce the losses faced by the society. This paper gives an overall survey on the various flood monitoring and alerting systems in the different flood prone areas around the world.

Keywords: Raspberry PI, Ultrasonic sensor, IoT, GSM (Global system for Mobile communication), WLAN.

I. INTRODUCTION

Flood monitoring is a particularly challenging application for Internet of Things (IoT). In fact, it offers a complex scenario for the variety and number of sensors involved, their location and relative communication problems. The type of sensors involved in the process and the corresponding type of installation depend on the kind of collected data and on their geo-localization (i.e., urban areas, where powering and communication are relatively simple, or in remote and difficult to access mountainous or country locations). The kind of data collected ranges from rain monitoring to river gauging with several parameters to be monitored and compared. In the case of rivers, the problem depends on their size and dimension and geography of the region where they flow, if they are small creeks or wide rivers, if they flow in a steep or fiat area, in open air or are channeled underground, etc.

From this point of view, we already activated different collaborations and definitions of common goals with public administrations involved in the management of the experimental areas. To this aim, we designed a general hardware and software loT infrastructure and architecture applicable to the environmental problem mentioned above, but extensible to the more general problem of monitoring the environment in densely inhabited areas.

II. RESEARCH METHODOLOGY

Our research will be an element of great importance to train specific risk management and to deliver elements of innovation and encouragement for the definition of land management strategies both on the local and regional scale. Moreover, this research will help to provide knowledge and tools for effective decision making and public engagement. In particular, we detail the sensor classes (their design for the new ones), their communication mechanisms and associated software services as components of a general IoT infrastructure. The aim is to monitor either rainfalls, river discharge or their temporal correlation in order to obtain early alarming Information. In our IoT approach, all collected data will be continuously transmitted, through the Internet communication infrastructure, to software components designed to compute the stream- flow and to quantify the spatial distribution of flood risk for each controlled watershed. The computed risks, together with data coming from other sources (barometric and river discharge sensors, cameras operators of public organizations, emergency agencies, private citizens), will be examined by a diagnostic decision system implementing a risk-alert scheduling strategy, able to diagnose the health state of the controlled environment and to define specialized alarm levels for each potentially interested area. Finally, the computed risks will be used for specializing alerting messages, to be sent to all citizens (ubiquity) present in each selected area only (alerting locality).

III. LITERATURE SURVEY

1. To decrease the challenges that the cities face such as scarcity of energy sources, flooding prevention, healthcare, housing water and deteriorating infrastructure, making a city 'Smart' is emerging. The Internet of Things or IOT provides the ability for human and machines to interact from billions of things that include sensors, services, or other Internet connected things. This paper aims to realize the security requirement and security architecture of Internet of things technology for urban flooding prevention management system and discussed the demand and overall design of urban flooding prevention management system. Finally, the application process of the Internet of things technology in Chongqing flooding prevention management system is summarized. For emergency command and dispatch there is visual management, and at the same time, network assessment management for the drainage pipe can be conducted correctly. The flood control and drainage function of Chongqing will gradually improve with smooth drainage facilities also the inspection and maintenance management will be standardized.

2. Floods, extreme weather events, have occurred with frequent regularity over last two decades causing severe urban flood related inundations. India is primarily an

Design of Hybrid Electric Vehicle with Solar Energy and Wireless Charging

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Abstract— With the advancement in 21st Century, there has been increase in usage of Oil and Gas leading to problems like Global Warming, climate change, shortage of crude oil, etc. Due to these reasons Automobile Companies have started doing research for making Hybrid Technology usable into the daily life. The technologies used in the making of Hybrid Cars such as "Hybrid Solar Vehicle", "Hybrid Electric Vehicle" and "Plug In hybrid electric vehicles". On this bases the explanation of such technologies, their function, drawback of this technology, efficiency of Hybrid Cars, and Case studies on the present commercial hybrid cars and the fuels and raw materials used in the Hybrid Cars. The advantages and disadvantages of Hybrid Electric Cars and technologies which will take over the world in future and would become the alternative of Petrol and Diesel Cars. Electric vehicles (EVs) as the next generation of vehicles are becoming more reliable. Battery charging system is an important challenge to make the EVs popular. Wireless charging are user friendly and safe systems. It proposed to overcome consumer's concerns regarding charging battery and driving range. The wireless power transfer (WPT) circuit topology for EV charging applications are presented. The coil and ferrite shapes have been discussed. The health and safety issues as the highest priority for electrical, coupling fields and fire hazards are also discussed addressing related standards for WPT.

Index Terms— MPPT-Maximum Power Point Tracking, HEV-Hybrid Electric Vehicles, SPI-Serial Peripheral Interface, TWI-Two Wire Interface.

I. INTRODUCTION

Electric vehicles are the future of transportation since it reduces the use of fossil fuels to a larger extent. Developed and developing countries are encouraging use of electric vehicles due to its efficiency and supposed green technology. Though charging of electric vehicles is supposed to be eco-friendly, reports deny it. As charging the electric vehicle battery is again from grid which is energized by the use of fossil fuels, it can't be eco-friendly any more. Harnessing the solar power to charge an electric vehicle battery is the eco-friendliest alternative to charge an electric vehicle. To optimize the power output from solar panel, Maximum Power Point Tracking (MPPT) is implemented. MPPT maintains the operation of the panel at maximum power point so that the efficiency of the panel is increased.

The technologies for global transportation are dominated by internal combustion Engine powered vehicle that leads to major threat to Green gas emission. Even though the global transportation technology partially moved to Hybrid fuels and battery electric vehicle. These technology improvements are not attracted the global customer because of its cost and its compatibility. Our aim is to build a low cost Solar Powered Electric Vehicle that would meet the requirements of the global customer. SPEV comprises of inbuilt solar panels to charge the vehicle, tachometer for measuring rotation speed, Motor controller and 15v DC motor used in SPEV. The vehicle has user interface supported with Android OS. The automated solar powered electric vehicles is added advantage that can be implemented for limited area with help of Ultrasonic array for obstacle avoidance, Lora, GPS Maps API and intelligence algorithm

II. LITERATURE SURVEY

1. A solar vehicle is an electric vehicle powered completely or significantly by direct solar energy. Usually, photovoltaic (PV) cells contained in solar panels convert the sun's energy directly into electric energy. The term "solar vehicle" usually implies that solar energy is used to power all or part of a vehicle's propulsion. Solar power may be also used to provide power for communications or controls or other auxiliary functions.

2. The technologies which will change the face of Automobile Sector would be "Hybrid Electric Vehicle", "Hybrid Solar Vehicle", "Hydrogen Fuel Cell", etc. From all this Hybrid Electric Vehicle is considered as the most industrially matured technology and has efficiency more than cars running on Petrol/Diesel/CNG while Hybrid Solar Vehicle has lower efficiency than vehicle running on Petrol/Diesel/CNG. So, this technology is for drivers who want to cover less distance. To overcome this constraint, "Plug-In Hybrid Electric Vehicle" came into existence.

3. Regenerative braking is an energy recovery mechanism which slows down a vehicle by converting its kinetic energy into another form, normally into electrical energy, which can be used immediately or stored until needed in high voltage batteries. The electric motor is operated in reverse during braking or coasting, acting as generator. The rotors of electric traction motor are coupled with wheels; they experience opposing torque as current is induced in the motor coils. The wheels transfer kinetic energy via drivetrain to generator.

A New Cascaded Two Level Inverter based Multilevel STATCOM for High Power Applications

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Abstract— A uncomplicated and reliable STATCOM project for static var compensation and refinement of power quality are debated in this paper. The analysis situs consist of combination of two level voltage source inverters. Cascaded inverter is attached to low tension side of three phase coupling transformer. The system is operated as four-level inverter by maintaining dc link voltages of two inverters at a determined proportion. Balancing od dc link voltage is primary challenge For cascaded inverters. MATLAB/SIMULINK is used to look over the system and for balanced and unbalanced conditions results are substantiated.

I. INTRODUCTION

Generation and transmission of power is complex process, it requires working of many components to produce maximum output. The reactive power is one of the main component. Voltage to be maintained to deliver the required active power through transmission lines. Reactive power is needed for the operation of loads like motor loads and other inductive load [2]. Nowadays a wide range of very flexible controllers, which capitalize on newly available power electronics components, are emerging for custom power applications. STATCOM is widely accepted as a reliable reactive power controller replacing conventional var compensators, such as the thyristor-switched capacitor (TSC) and thyristor-controlled reactor (TCR). This device yields reactive power compensation, active power oscillation damping, flicker attenuation, voltage regulation, etc.[3][4][5]. The VSC connected in shunt with the ac system put up a multifunctional topology which can be used for up to three quite distinct purposes [6][7].

Generally in high-power applications, Var compensation is acquired using multilevel inverters [8]. These inverters comprise of a large number of dc sources which are usually realized by capacitors. The converters draw a small amount of active power to maintain dc voltage of capacitors and to compensate the losses in the converter.The capacitors voltages are unbalanced due to mismatch in conduction and switching losses of the switching devices . Balancing these voltages is a major research challenge in multilevel inverters. Various control schemes using different topologies are reported in [9]–[10].

Static Var compensation by cascading conventional multi-level/two level inverters is an enticing solution for high power applications. It comprise of standard multilevel/two-level inverters connected in cascade through open-end windings of a three-phase transformer. These topologies are popular in high-power drives [11].The number of levels in the output voltage waveform can be increased by maintaining asymmetric voltages at the dc links of the inverter. This boosts PQ [12]. Since the overall control is simple compared to conventional multilevel inverters. Various var compensation schemes based on this topology are reported in[13]–[14]. In[12], a three-level inverter and two level inverter are connected on either side of the transformer low-voltage winding. The dc-link voltages are maintained by separate converters. In [15], three-level operation is achieved by using standard two-level inverters. The dc-link voltage balance between the inverters is affected by the reactive power supplied to the grid.

The topology, mentioning here, uses standard two-level inverters to achieve multilevel operation[1]. Four-level operation is obtained by regulating the dc-link voltages of the inverters at asymmetrical levels. Simulation study is carried out for balanced and unbalanced supply-voltage conditions to verify the efficiency of the proposed system. Whenever there is a sudden change in reference current, the inverter dc-link voltages collapse. In order to look over the behavior of the converter, the entire dynamic model of the system is developed from the equivalent circuit.

II. SINGLE TWO-LEVEL INVERTER-BASED STATCOM

The image-1 below exhibits the power system model contemplated in this journal [3]. Image-2 shows the circuit implementation of the single two level inverter based static compensator. The high tension side of transformer is associated to grid and low tension side to inverter.

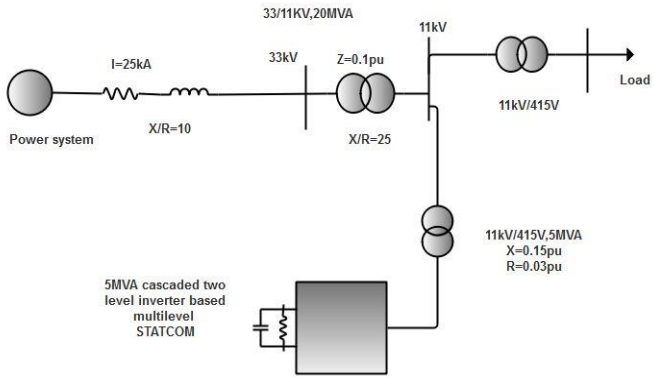

Image-1- Power system and the STATCOM model

Improved Output from Buck-Boost Converter for Commercial Loads

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Abstract— This paper has improved Multi-output Buck-Boost Converter for commercial purpose which deals with the regulation of the output voltage. Several output voltages can be generated and used in different applications such as multi-level converters with diode-clamped topology or power supplies with several voltage levels employing this topology. . It can be employed for both steady state and transient response Dependency of DC-link voltage balancing and the power factor of the load must be reduced and it is challenging to the suppliers to build such multilevel inverter. Multi-output DC-DC converter has a wide range of applications but it has input voltage disturbance. In this paper, the effect of these disturbances from the output voltages can reduced.

Keywords— Buck Boost converter, Multi-output converter, PWM

I. INTRODUCTION

The DC - DC Buck-Boost converters are widely used in computer hardware and industrial applications such as computer periphery power supplies, car auxiliary power supplies, aerospace, servo-motor drives and medical equipment and also in agricultural purposes. In recent years, the DC-DC conversion technique has developed greatly. High gain voltage converters are necessary for the above mentioned applications. The Pulse Width Modulation (PWM) technique used to get the variable output voltage from these converters results in high switching losses, high switching stresses, reduced reliability and increased Electromagnetic Interference (EMI) when the converters are operated at high frequencies.

The main objective of this proposed converters is to overcome these drawbacks and to design new converters to achieve high efficiency, high power density and voltage gain. To increase the power density and to reduce the size and weight of the converter with high voltage gain, the proposed Enhanced Multi-Output Buck-Boost Converter is designed with capacitors having individual charging capacities which are greatly used in reducing the imbalance in voltage levels.

The single-inductor multi-output DC-DC converter, named enhanced multi-output buck–boost (MOBB) converter, which is capable of step-up (SU) and step-down (SD) conversions. In this topology, several output voltages can be generated, which may be useful in a variety of applications such as diode-clamped multi-level inverters and multi-voltage DC-networks supplying loads with different requirements.

II. III OPERATION OF THE PROPOSED DOBB CONVERTER

Figure 1 illustrates the newly introduced single input multi-output topology that can carry out both of the step up and step down conversions. DOBB converter offers versatility due to its capabilities in improving the dynamic response during the input voltage and load disturbances. Moreover, for applications where in there is a prior information or predictability regarding the load or input voltage disturbance, DOBB possesses the capability to eliminate the impact of these disturbances from the output voltages. Further, the new topology might act as sign priorities to the output voltages in order to attain a better dynamic performance in which the sensitive loads are provided in addition to loads that frequently vary.

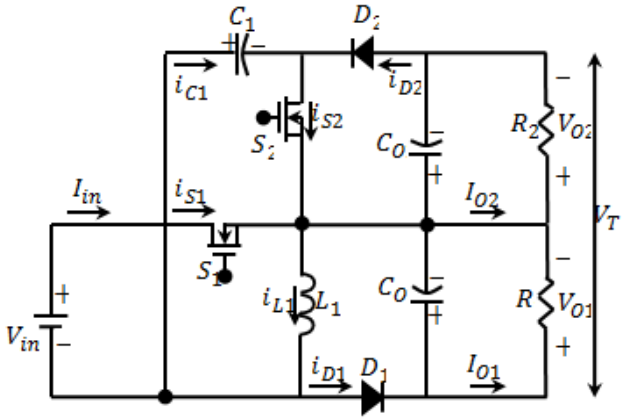

Figure 1 Proposed DOBB converter

EEG data processing for Emotion detection using DTCWT and FFNN Architecture Design

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Abstract— Emotion detection and classification algorithms developed are based on wavelet features and neural network approaches which hare limited to software implementation only. Very little literature is reported on hardware implementation of EEG detection and classification approaches. One of the major challenges in hardware implementation is the computation complexity of DWT processor and FFNN architecture. In this paper, architectures for data path operation of both DWT and FFNN structures are designed and are implemented on FPGA platform. A low power and high speed architectures for DTCWT and neural network are designed based on customized systolic array logic and reusable data path circuitry respectively. The nine-stage DTCWT architecture designed is designed to work at maximum frequency of 322 MHz consuming less than 0.71 W of power. The FFNN structure is designed to operate at maximum frequency of 321 MHz consuming less than 2.2 W of power. Both of the architectures are suitable for real time EEG data processing.

Index Terms— DTCWT, Emotion detection, FFNN architecture, FPGA platform

I. INTRODUCTION

With complex wavelet transforms demonstrating shift invariance property, EEG signal analysis using Dual Tree Complex Wavelets (DTCWT) has recently gained much importance. In EEG data processing, artifacts that get integrated with EEG recording cause disturbances in accurately extracting features. Due to the complex interconnections between billions of neurons, the recorded EEG signals are complex, non-linear, non-stationary and random in nature, **U.R. Acharya [1]**. Feature based classification algorithm based on neural network approaches rely on input data vector and the intensity levels of feature vectors for accurate classification. The trained network weights and biases that process the input data performs classification of emotions and any deviations in input patterns may lead to unsuccessful in
classification. In addition to artifacts, any movement electrode due to head movement also introduces artifacts.
Further to artifacts, recording of EEG data at different time intervals also lead to variations in event occurrence in EEG. In order to design reliable and invariant system for feature detection and classification, DTCWT is used in place of DWT. In this paper, a detailed discussion on EEG feature detection and classification based on DTCWT and Feed Forward Neural Network (FFNN) is presented. DTCWT is an enhancement to the discrete wavelet transform (DWT). It is a shift invariant and directionally selects two and higher dimensions, **Selesnick Ivan W** [**2].** It achieves a redundancy factor of 2^d for d-dimensional signals,which is lower than the undecimated DWT. The multidimensional (M-D) DTCWT Transform is non separable but is based on a computationally efficient, separable filter bank (FB). The DTCWT of a sign, x(n) is executed utilizing two fundamentally inspected DWT's as a part of parallel on the same information. DTCWT coefficients are non-swaying with an almost move invariant greatness and altogether lessened associating with more directionalities when contrasted with the DWT.Thus is it more efficient in time frequency localization of EEG signal. Similar to the positive or negative post-filtering of real subband signals, the idea behind dual tree approach is quite simple. **Kingsbury N [3]** according to the author, DWT is very sensitive in the translation, it is very less effective in the domain of statistical signal processing. To address the, shift-variance problem a new method is employed by considering two DWT's, one of DWT gives the real part of the transformed co-efficients and the other one gives the imaginary part. By combining the co-efficients of two DWT's into complex-valued co-efficients, a new transform is obtained by the name Dual Tree Complex Wavelet Transform (DTCWT).This new transform has some, characteristic properties including near shift-invariance, better directional selectivity, which is very important in signal processing. **Musa et. al** [**4**], in this study first the features of EEG data are extracted using a dual-tree complex wavelet transformation at different levels of granularity to obtain size reduction and statistical features are extracted. Five statistical features are extracted from new dataset with reduced size and are classified with the help of Complex valued neural networks (CVANNs) using DTCWT in the classification of EEG data. The proposed method is tested using a benchmark of EEG dataset, and high accuracy rates are obtained. The stated results show that the proposed method can be used to design an accurate classification system for epilepsy diagnosis. **R.Y.Yu** [**5**] proposed that DWT is not able to cancel the aliasing, thus resulting in unclearly separated sub-bands. The dual-tree complex wavelet transform (DTCWT) was first introduced by Kingsbury, and he proposed to extract the signal component related to sensory motor rhythms. There are several 1D-DWT architectures the most popular ones are, Direct Mapped Architecture, Folded Architecture, MAC Based Programmable Architecture, Flipping Architecture,

Investigation on Wear Behavior of Natural Fiber Reinforced Polymer Composite Materials

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***Abstract*—In the area of medical field, requirement of alternative materials to manufacture orthopaedic implants having more scope. In this Project work the polymer based natural fibre reinforced composite materials with different weight fraction of fibres are developed and characterized. By considering the Rule of mixture, different weight fraction of Epoxy Resin LY556 as a Matrix material, LY95l as Hardener with Kenaf and Hemp as a natural fibre reinforced materials Hybrid composite material is developed with addition of 5% filler material Al_2O_3 by Hand Lay-up Technique. In this Project work the Wear and Surface Roughness are evaluated. Experimentations are conducted as per biomaterials ASTM standards to ensure the requirements of the implant material. As a result of this Project work, polymer based natural fibre reinforced composite with 24% Hybrid fiber (Kenaf & Hemp) filled with 5% Al_2O_3 composite material fabricated by vacuum bag Molding technique is showing very good mechanical properties among the other specimens. Thus, in this Project work, suggests the above mentioned 24% Hybrid fiber (Kenaf & Hemp) filled with 5% Al_2O_3 composite material as an alternative implant material for trabecular bone of femur bone and other orthopaedic implants.**

Keywords*— *Natural Fibers, Al_2O_3, Wear Test, Design of Experiments.

I. INTRODUCTION

In growing demand to meet the industrial needs for satisfying applications to bridge the various operations, the technology in unearthing the newer and their combinations of materials will have a prominent and vital role to assure for successful functioning. Currently Industries are focusing upon choosing the consistent and suitable materials for their specific services considering technically benefit able aspects in terms of both effectiveness and suitable application. Composites are generally known process for materials combination and their successful blending to extract the required application in various fields like automobile, aerospace, defence, medical, Etc., [1]. Composite oriented materials have entered into the expanded fields yielding attractive results in connection with satisfying serviceable products by various processes. In research fields composite materials are in great demand for innovative material combination for successful scope in the respective areas of investigations [2]. Now-a-days NFRPC is widely adopted in various fields because of its ample advantages. The primary reason for choosing these materials is because of its eco-friendly nature, recyclability and biodegradability [3]. NFRPC are chosen to use in the various manufacturing industries like automobile, medical, household appliances etc. natural fiber is referred to the fibers which are extracted from natural resources like plant [4]. Natural fibers exhibit stronger properties when compared with the artificial fibers. Low density, low weight, eco-friendly nature is some of the dynamic properties of natural fiber [5].

II. LITERATURE SURVEY

D Chandramohan They suggested to use the benefits provided by the renewable resources & their application in the stream of orthopaedic because NFRPC (Natural fiber reinforced polymer composite) plates will have faster fracture healing capacity and they provide suitable environment for the growth of the bone which results in increasing bone density [6]. Ribot et.al they came to know that the kenaf base fiber has got more strength than the natural fibers like jute, sisal etc. The kenaf fiber has got tensile strength of rage 400-550Mpa. So, the kenaf fiber will fall into the group of good reinforcement material, hence in polymer composite material it can be used as reinforcement material and it has got all the required properties [7]. Giuseppe Cristaldi et.al during their research on composite material they concentrated on the natural fibers and their uses, and they chose it has reinforcement material in composite. Most of the researchers will employee this as reinforcement because of their environmental and cost-effective property. Even it has got his own limitation and which need to be overcome for proper utilization of this [8]. Hajnalkahargitai et.al on his work and as well as by considering the mechanical test it is concluded that 40-50% of hemp fiber is optimum and dry composite samples has got fewer bending properties than the wet sample [9]. Girisha.C et.al while carrying their research work, the investigation is carried out on the composite which are fabricated with sisal, coconut spat as reinforcing material for testing the tensile properties. The alkali treatment is carried out on the natural fibers which are extracted by manual as well as retting process. Composite with a reinforcement of natural fiber of individual type shows less tensile strength when compared to reinforcement of hybridization type [10]. H G Hanumantharaju et.al from his research work he concluded that the alumina can be used as substitute material for bone in the

Design of Underwater Remotely Operated Vehicle

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***Abstract*—Under the "Archimedes' Principle," this ROV operates. "An item immersed in a fluid experiences a buoyant force that is equal in magnitude to the force of gravity on the displaced fluid, "which is according to Archimedes' principle.**
Here, we're attempting to create a car prototype that the user will be able to control remotely. We use Node MCU circuit boards to remotely operate this model. The frame design utilises a variety of materials.
The objective is to create and test a remotely operated underwater vehicle (ROV) that is lightweight, affordable, and capable of conducting surveys in shallow waters (30 m). This focuses on the creation, testing, and design of such a ROV.

Keywords— Remotely operated vehicle, Buoyancy, Foreign bodies, Acrylic tube, CPVC Pipes, PVC Pipes, Node MCU

I. INTRODUCTION

Remotely operated vehicles, also known as ROVs, are unmanned, highly agile vehicles or underwater vehicles that can be used to explore ocean depths and great heights while being controlled from the air or the surface of the sea. Without actually being in the water, remotely operated vehicles, or ROVs, let us explore the ocean. On a surface vessel, usually, a human uses a joystick to operate these underwater equipment, much like how you would play a video game.

The ROV is tethered to the ship by a set of cables, which allows the operator and the vehicle to communicate electronically. The majority of ROVs come with at least a still camera, a video camera, and lighting, enabling them to transmit photos and videos back to the ship.

Vehicles may also be outfitted with additional tools, including a manipulator or cutting arm, water samplers, and measuring devices for things like temperature and water quality. Because operators can stay safe (and dry!) on ship decks, ROV operations are typically simpler and safer to carry out than any form of occupied-submersible or diving operation, even if using ROVs eliminates the "human presence" in the water. Because ROVs can stay underwater for a lot longer than a human diver, they allow us to explore locations that are too deep for humans to safely study on their own.

A remotely operated vehicle used for underwater exploration is called an underwater ROV. Underwater ROVs are used by researchers and scientists to study the ocean's depths, venture where humans are not safe, and carry out a variety of other tasks. The engineering challenge was met in 2015 by 4-H campers at the Great Lakes Natural Resources Camp by creating an underwater ROV. The 4-H organisation is committed to contributing in some way to the growing need for STEM experts. To assist ensure that they will be internationally competitive and ready to be a part of the next generation of STEM leaders, 4-H science programmes are currently providing hands-on learning opportunities to millions of youngsters around the country.

Electrical systems (wiring and circuitry), mechanical structures, sensors and appendages, and task-specific structures are among the many parts that make up the ROV's general operating mechanism.

The ROV's skeleton serves as the support structure for all of these systems. To minimise added weight and drag when in motion, it is built as light as feasible. In order to protect the internal components from inadvertent damage, it is covered by a structure known as the Manifold. Along the frame members are holding clips for supporting wiring and other electrical circuit components.

II. OBJECTIVE

- The objective is to develop a low-cost remotely controlled underwater vehicle (ROV) that can do surveys in shallow waters (30 m). This focuses on the creation, testing, and design of such a ROV.
- We can explore the ocean or any other depth of water using a remotely piloted vehicle without really being in the water or ocean.
- To determine whether any debris or live things are lodged inside the pipe, as well as any bore line faults.
- In addition to structural testing of offshore platforms and internal and external inspections of undersea pipelines, ROVs are also utilised for a wide variety of other purposes, many of them scientific. They have proven to be of great utility in ocean research and are also employed in aquarium instructional programmes and live online connections to scientific excursions.

III. METHODOLOGY CARRIED OUT

- The conceptual design with a 3D model of the overall frame is created through CAD software.
- Required raw materials of the ROV is purchased which includes CPVC pipes, PVC pipes, Bilge Pumps, Arduino circuit board, Li-ion Battery, several joints (T joints, L joints etc), Propeller, Waterproof Camera, Acrylic tubes, LED Lights, wire connections and other accessories such as glue, glue stick hacksaw, hot glue gun mountings, nut and bolt etc.
- The frame is fabricated thoroughly from the conceptual 3D model that has been made through CAD software.
- Here the CPVC pipes are used for the outer frame of the ROV model and PVC pipes are used to act as a floater

Design and Fabrication of Foldable Diy Electric Scooter

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***Abstract*:- The world's population is growing but its surface area is contracting. The moment has come to consider a car that can be folded up easily and transported anywhere because our world is moving toward a more compact size. Our project's main goal is to create a portable vehicle that is simple to operate for people of both sexes and emits no emissions. We also considered parking issues when designing the project and chose to create a portable suitcase vehicle that is simple to fold. So, after usage, a suitcase can be folded, transported as luggage, and stored at home or another location that has space for a suitcase of that size. We have added a DC motor for power supply, which runs without gasoline and doesn't produce any pollutants. The DC motor's batteries can be recharged at home. The project is more inexpensive for those in the middle class because batteries can be charged. We used our engineering knowledge and certain examples from the Mazda Suitcase car in the development of this product. It is an affordable, small, and environmentally beneficial project that may be owned by any household member and operated on public roads within specific parameters. Power, economy, riding comfort, and low maintenance costs were our key design priorities. Additionally, we focused on ergonomics to provide a comfortable ride for the user.**

Keywords—Electric Vehile, Foldable and Portable, Lightweight, Rechargeable battery pack, (key words)

INTRODUCTION

The demand for autos is rising as the population grows. People will need room for both parking and driving as the number of cars increases. Because there is a finite amount of space and because there are more automobiles on the road, there is a need for parking because this increases traffic congestion. A current concern is pollution in addition to these. Every day, the pollution exceeds new thresholds. Thus, the concept of a folding and portable vehicle is born.

In the Case Since an automobile may be folded up and transported in a suitcase, parking space is not necessary. It can be employed in a variety of businesses, workplaces, college campuses, etc. because to its compactness. In various situations, a portable car can be used to travel short distances. It can be used for transportation on public highways.

We can substitute a motor and battery for the present invention's engine to get over the disadvantages outlined above. But the vehicle will end up being heavier. The portable

vehicle may be put together and taken apart as needed, and we can transport it anyplace in a suitcase. . If necessary, we could

put it together in under 10 minutes and drive it. We used three wheels for this portable vehicle, with the front wheel acting as the steering wheel and the rear wheels receiving power through a shaft. A DC electric motor is used in a vehicle to generate power. If a vehicle is not needed, we can simply fold utilizing dc motors. This mobile vehicle has a top speed of 20 km/h and can transport weights of up to 90 kg.

OBJECTIVE

- To solve space-related issues, a suitcase vehicle is being developed. As little time as feasible should be spent during assembly and disassembly.
- Low maintenance should be required for suitcase vehicles.
- The vehicle must be lightweight in order to be raised
- Driver comfort must not be sacrificed because it is a crucial aspect.
- Ease of folding: After the user grows accustomed to the tri-scooter, folding should be simple, stress-free, and take no longer than 10 minutes.
- Portability: It should be simple for both men and women to transport. It should be portable and simple to handle.
- Reliability: It ought should ride steadily, exude confidence, and perform similarly to a standard bike. Fit people of different sizes, be dependable, and be simple to maintain.
- Retailer Network: The programme ought to provide two to three price points, for example, using the good, better, and best axiom. Users should have easy access to sales and servicing through regional store networks.

LITERATURE REVIEW

In their research report, Bjarni Freyr Gudmundson and Mr. Esben Larsen reviewed alternative development methods for the folding electric motorcycle. They created a conceptual design and carried out thorough analyses of the specification, material choice, design and structural analysis, component choice, and test drive. The primary motivation for creating this kind of design was to provide the driver with comfort and compactness so that they may feel secure and at ease during each kart trip. The following subsystems, including the power train subsystem, wheel and tyre subsystem, braking subsystem, and chassis subsystem, need be planned and built in order to construct a vehicle. They started work on constructing a powerful, lightweight motorcycle as well as the vehicle's power train. They considered the price and effectiveness of the vehicle. Electric arc welding was employed to reduce the cost of the car because it is a convenient and affordable solution. Additionally, they

Numerical Analysis of Scallop Shapes on Performance of Lobed Nozzle

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***Abstract*- The infrared suppressor used in the exhaust system of turbofan engines, turbojet engines and turboprop engines generally has a lobed nozzle to pump cool air from the outside and mix it with the hot exhaust gas from the engine. The lobed nozzle mixes the primary and secondary streams with high effectiveness but induces low pressure loss has been widely used for heat and mass transfer in the fluid engineering field. The primary parameters used to evaluate the performances of the lobed nozzle include pumping performance, mixing effectiveness, and pressure loss. Higher pumping performance, higher mixing effectiveness, and lower pressure loss indicate that more cool air is pumped, the mixing with the hot exhaust is more effective, and there is less energy loss. The present study shows that double triangle scalloped nozzles has high mixing effectiveness than all other scalloped nozzles considered in the project work.**

Keywords:- Lobed nozzle, infrared radiation, infrared suppression, infrared seekers, mixing effectiveness, pressure loss.

I. INTRODUCTION

The word camouflage has its origin in the French word camoufler which means to disguise. During wars military equipments and men are required to hide or avoid the detection from their enemy. This is required to reduce threat of losing or to invoke a surprise attack on enemy. There were no equipments or sensing technology available during early days for sensing the threat from enemies.

This technique was first employed in early times of world war-I in order evade the detection from enemy. And this became a widely known and to be used by all countries during world war-II. During war army needs to protect its equipment and its soldiers as well. This led to a major breakthrough for the development in the stealth technology by evading detection[1]. The demand for countermeasures has increased as the technologies involved in detecting electro-magnetic spectrum become more advanced.

Nowadays the advancement in technology has led to camouflage of high-speed objects like helicopters, submarines etc. The so-called stealth helicopters operate on the above principle by reducing its heat signature. The mechanism used at the nozzle exit to suppress the temperature is called 'infrared suppression'. This reduces the threat from missiles which seek heat signatures. The technology where vehicle goes undetected on enemy's radar is called as stealth. Infrared suppression also enables noise suppression caused due to friction between hot core and secondary flow. Hence suppression means employed will also cause infrared signature to be reduced. This is evident from the latest high bypass turbofan engines. They are also called by the names ejectors, exhaust mixers or lobed nozzles.

The suppression techniques are employed for evading the detection. There are various techniques employed for suppression of radiations emitted due to heat signature. The following techniques are used nowadays: Ejector dilution, Fan augmented dilution, Swirl augmented dilution, Clean exhaust gases, Thick film cooling, Thin film cooling, Hiding view with insulation, Surface emissivity control.

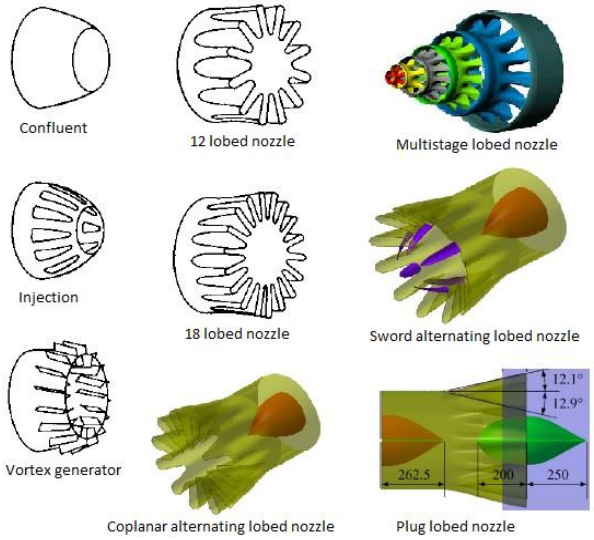

Fig.1 Types of lobed nozzle

In case of turbofan engines secondary air is forced into mixer through a bypass channel. Bypass ratio for old type of engines was less and this led to larger heat signatures and also produces high noise. But the latest engines uses high bypass ratios to overcome the noise and also to reduce high emission temperatures. High bypass ratio also increases efficiency of the engine because the mass flow rate of the secondary stream is more than the core stream and shear layer produced between core and secondary stream enhances the momentum transfer. This in turn reduces the fuel required for the thrust at take off and at cruising speed. Lobed mixers are passive type of infrared suppressors. Lobed mixers do not use any moving parts and hence they are considered as most effective in mixing secondary stream with the core stream. Lobed mixers development over many decades to the latest high mixing effectiveness is shown in Fig. 1.

Green House Monitoring using IoT for Medicinal Plants

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Abstract : **Agriculture is most important to human life so it can be improvised by using IOT technology gives a grasp to enhance the power of automation system in agriculture. Smart agriculture system uses the advantage of technologies such as Arduino and Wireless Sensor Network. This report is related to concept and features of the sensor world in the internet of things for agriculture which is used to enhance the production of the medicinal plants as well as maintains the medicinal property of it. The agriculture that is shown in this paper is combined with Arduino technology and different sensors and live data feed that can be obtained online through mobile phone. In India monitoring environmental conditions are the major factors to improve the yeild of efficient crops. The content of this report includes the development of a system that can monitor temperature, humidity, soil moisture level and control them in a Green house through sensors using Arduino board. With its energy efficient and low cost, the system has the potential to be useful in water-limited geographical areas.**

Keywords: Internet of Things (IoT), Automation, Arduino technology, Sensors.

INTRODUCTION

In this report, we develop a Green house Monitoring system with the concept of the internet of things. Technology maintains the conceptual thinking of a farmer to smart agro-buisness which performs the path to the next era of soft computing. One of the main areas where IOT based research is going on and new products are launching on an everyday basis to make the activities smarter and efficient towards better production is in the feild of agriculture. Automation must be implemented in agriculture to overcome these problems. So, to provide a solution to all such problems, it is necessary to develop an system that will take care of all factors affecting Medicinal value at every stage. The product will assist farmers with live data (temperature, humidity, soil moisture) from the green house so that the necessary steps can be taken to enable them to grow plants wisely by providing required amount of water and controlling the temparture and humidity. But complete automation in agriculture is not achieved due to various issues. Though it is implemented at the research level and it is not given to the farmers as a product to get benifited from the resource. Hence this report deals with developing Green house Monitoring and Smart agriculture usin IOT devices that can be used by farmers. Agriculture is considered the basic source of food grains so that they still utilize the customary techniques for cultivating which results in low yeilding of harvests and natural products. Be that, wherever computerization had been executed and indivisuals had been replaced via programmed hardware, the yeild has been improved. Subsequently, there we have to execute present-day science and innovation in the farming area for expanding the yeild. The majority of the papers imply the utilization of remote sensor organized which gathers the information form varios sorts of sensors and afterward send it to the fundamental server utilizing remote convention.

OBJECTIVE

To prepare a setup of a protype to measure and maintain soil moisture, temperature and humidity of a plants in Green house Monitoring especially medicinal plants. By assembling the microcontroller, sensors and Wi-Fi module described below we can measure all the above features, as well as it can controll them if there is any variations in the required parameters by itself. To implement IoT for remodeling agribusiness empowering the agriculturists through the broad range of strategies to increase the productivity.To build a prototype of a system required SSSwhich is to be automated.

INTERNET OF THINGS

Internet of Things describes an emerging trend where a large number of embedded devices are connected to the Internet. These connected devices often provide sensor data to the cloud storage and cloud computing resources where the data is processed and analyzed to gain necessary insights, cheap cloud computing the power and increased device connectivity is enabling this trend.

IoT solutions are built for many vertical applications such as monitoring and controlling the environment, monitoring health, vehicle monitoring, monitoring and controlling industries, and home automation.
At a high level many IoT systems can be described using the diagram below

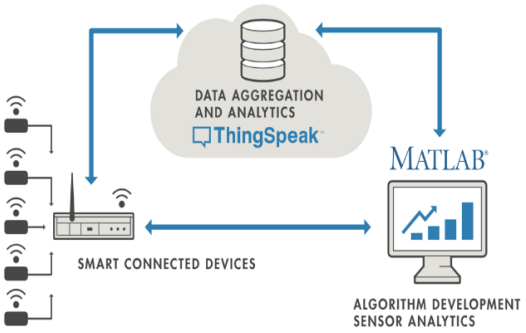

Fig. IoT SYSTEM.

Extraction of Bio-Diesel From Waste Plastic Through Pyrolysis Process

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***Abstract*—The long-term ambition of energy protection and cooperation, combined with environmental issues of problematic waste accumulation, is tackled through the proposed waste-to-fuel technology. The need to control plastic waste is becoming more evident. This leads to pyrolysis, which is a way to make it very useful to us by recycling them for the production of fuel oil. In this work, plastic waste is used as a source for the production of automotive bio-diesel fuel via a two-step thermochemical process based on pyrolysis and hydro-treatment. As many environmental and social problems arise from plastic waste, re-use technologies are of vital importance in achieving the Sustainable Development Goals (SDG). A potentially cost-effective solution can be accomplished by using waste plastics processed into bio-oil. Thus, the problems faced by the rise in plastic waste and the rising fuel crisis can be avoided by developing a system that can minimize hydrocarbons dependence due to plastics and increase the availability of alternative fuels.**

***Keywords*—Bio-oil, Furnace, Heater, Pyrolysis, Waste plastic, Wastewater.**

INTRODUCTION

The consumption of plastics has increased from 4000 tons/annum (1990) to 4 million tons/annum (2001) and it is expected to rise 8 million tons/annum during the year 2009.Nearly 50 to 60% of the total plastics are consumed for packing. Once used plastic materials are thrown out. They do not undergo bio-decomposition. Hence, they are either land filled or incinerated. Both are not eco-friendly processes as they pollute the land and the air. Waste tyres in India are categorized as solid waste or hazardous waste. It is estimated that about 60% of (retreated) waste tyres are disposed via unknown routes in the urban as well as rural areas. The hazards of waste tyres include- air pollution associated with open burning of tyres (particulates, odour, visual impacts, and other harmful contaminants such as polycyclic aromatic hydrocarbon, dioxin, furans and oxides of nitrogen), aesthetic pollution caused by waste tyre stockpiles and illegal waste tyre collecting and other impacts such as alterations in hydrological regimes when gullies and watercourses become waste sites.

Plastics have now become indispensable materials, and the demand is continually increasing due to their diverse and attractive applications in households and industries. Mostly, thermoplastics polymers make up a high proportion of waste, and this amount is continuously increasing around the globe. Hence, waste plastics pose a very serious environmental challenge because of their huge quantity and disposal problem as thermoplastics do not biodegrade for a very long time. All the reasoning and arguments for and against plastics finally land upon the fact that plastics are nonbiodegradable. The disposal and decomposition of plastics have been an issue that has caused several types of research works to be carried out in this regard. Currently, the disposal methods employed are landfilling, mechanical recycling, biological recycling, thermal recycling, and chemical recycling. Of these methods, chemical recycling is a research field which is gaining much interest recently, as it turns out to be that the products formed in this method are highly advantageous.

I. OBJECTIVE

- This project attempts to show how human has been utilizing the energy and explore prospects of optimizing the same one of the alternative fuels is household plastic waste oil. Fuel obtained from pyrolysis process shows nearly same properties as that of diesel fuel. So we can use plastic oil as alternative fuel.
- To collect the household plastic waste from different places.
- To develop and fabricate the pyrolysis unit to produce liquid fuel from plastic waste.
- Conversion of household plastic waste in to liquid fuel.
- To purify the produced liquid fuel by water washing method.
- To conduct the different experiments to determine the different properties of liquid fuel.

II. METHODOLOGY CARRIED OUT

Design concept generation refers to the actual conceptual design where the design concept is an approximate description of the technology, working principles and form of the product. It has a detailed description on how the product will satisfy and meet customer requirements. Existing design constraints may even be solved by having a good development in the design concept.

For this project, many alternative concepts have been generated. The various generated concepts were then individually evaluated to find the most appropriate concept for the product. The concepts that gave the most advantages were considered as the best concept and a wait further evaluation. The product sketch for the chosen concept was further drafted.

Design concept generation is usually expressed in the form of sketches or rough 3-D model sand often accompanied by a brief textual description for the overall design concepts.

- Literature review
- Identification of the problem
- Finding solution of the problem
- Data collection
- Design of product
- Market survey for required components
- Purchase of required components system

Design of Smart Helmet using Microcontroller

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***Abstract*— The main objective of this project is to build a safety system which is integrated with the integrated helmet and intelligent bike to reduce the probability of two-wheeler accidents and drunken drive cases. The push button checks if the person is wearing the helmet or not. Alcohol sensor detect the alcoholic content in riders' breath. If the rider is not wearing the helmet or if there is any alcohol content found in rider's breath, the bike remains off. The bike will start when the rider wears the helmet and if there is no alcoholic content present. When the rider crashes, helmet hits the ground, accelerometer detects the motion and tilts of helmet and reports the occurrence of an accident. It sends information of the corresponding location via message to family members of the rider and emergency contact numberIn order to avoid the death and rash driving, drink and drive, this project would be useful for the people.**

Keywords— Smart, microcontroller, accident prevention, safety or rider, Arudino, web-based.

I. INTRODUCTION

As the technology developed the rate of mishap is also increase. The riders avoid wearing helmet without any specific reason. also, over speeding and drink and drive have come common issues. Due to the lack of experience or focus and violation of business rules, which leads to accidents. So, with the help of technology we made sure that business rules are followed, problems mentioned over are avoided and their goods are minimized. The idea of developing this work comes from our social responsibility towards society. In numerous accidents that do, there's a huge loss of life.

numerous people die on roads every time that do due to bike accidents. There are colorful reasons for accidents similar as not having acceptable capability to drive, imperfect two wheelers, gadarene driving, drink and drive, etc. But the main reason was the absence of helmet on the person which leads to immediate death due to brain damage. thus, it's important that there should be a installation to minimize the after goods of these accidents. still, the main thing of our work is to make it obligatory for the rider to wear a helmet during the lift, to help drink and drive script and over speeding or rash riding by motorcyclists and also give proper medical attention when met with accident by waking the concerned person which will give results to other major issues for accidents.

currently as IT diligence are setting a new peep in the request by bringing new technologies and products in the request. In this study, the stress situations in workers are also noticed to raise the bar high. Though there are numerous associations who give internal health related schemes for their workers but the issue is far from control. In this paper we try to go in the depth of this problem by trying to descry the stress patterns in the working hand in the companies we'd like to apply image processing and machine literacy ways to assay stress patterns and to constrict down the factors that explosively determine the stress situations.

The idea of developing this work comes from our social responsibility towards society. In numerous accidents that do, there's a huge loss of life. Numerous people die on roads every time that do due to bike accidents. There are colorful reasons for accidents similar as not having acceptable capability to drive, imperfect two wheelers, gadarene driving, drink and drive, etc. But the main reason was the absence of helmet on the person which leads to immediate death due to brain damage. thus, it's important that there should be a installation to minimize the after goods of these accidents. still, the main thing of our work is to make it obligatory for the rider to wear a helmet during the lift, to help drink and drive script and over speeding or rash riding by motorcyclists and also give proper medical attention when met with accident by waking the concerned person which will give results to other major issues for accidents.

Moment we all talk about Internet of effects and how it's changing our lives. The Internet of effects is creating a new world, quantifiable and measurable world where people and businesses can manage their means in better informed ways, and can make further timely and more informed opinions about what they want or need to do. This new world brings in numerous practical advancements similar as convenience, health and safety in our lives.

In India there's one death every four twinkles due to road accidents. Out of total road accidents, 25% accounts for two wheeler accidents. According to recent study 98.6 % bikers who failed, didn't wear a helmet. Hence police department has made it obligatory to wear helmet while riding.

Riders face numerous problems on the go similar as unfit to take calls, unfit to see charts for navigation purposes etc. While having these helmets as a safety measure is a boon, we add further features to it to make it smart.

Smart Helmet is an innovative way of erecting a helmet with rearmost technologies. Did you ever feel the need to hear to music or perhaps shoot a SOS communication in case of exigency? To make the riders feel more comfortable, we designed a smart helmet.

This helmet is integrated with rearmost IOT technology through which it'll get connected to the authorized person when the rider meets with the accident the authorized person is notified with a SMS and position where the accident took place.

This design helps stoner's to indeed more wear helmet because of its features in addition to safety purposes.

Fabrication of App Controlled Hydraulic Jack using Bluetooth

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***Abstract*— This device is an Intelligent motorized hydraulic jack for automobile garages has been developed to cater the needs of small and medium automobile garages and also people who are not strong enough to manually use a mechanical screw jack. Garages are normally manpowered with very minimum of skilled labors. In most of the garages the vehicles are lifted by using screw jack. This needs manual work and which tires the worker. In order to avoid all such disadvantages. This, motorized hydraulic jack has been designed in such a way that it can be used to lift the vehicle very smoothly without any impact force. The operation is made to be simple that even an unskilled worker can handle, by just demonstrating the working of the motorized hydraulic jack once. The D.C motor is coupled with the hydraulic jack by cam mechanism. The cam shaft moves up and down depends upon the rotation of D.C motor by cam mechanism. This is a simple type of automation project. This equipment is fixed to the chassis of the vehicle, so that it facilitates the lifting the vehicle.**

Keywords—Hydraulic jack; fabrication; D.C motor; cams, smartphone, arduino, bluetooth

I. INTRODUCTION

The hydraulic screw jack for automobile garages has been developed to cater the needs of small and medium automobile garages, which are normally man powered with very minimum of skilled labors. In most of the garages the vehicles are lifted by using screw jack. If an elderly person or woman is using the car and there is necessity of changing one of the tyres due to a puncture, then to avoid the manual work which requires lot of effort can be avoided using the app controlled hydraulic jack.

In order to avoid all such disadvantages. This, hydraulic screw jack has been designed in such a way that it can be used to lift the vehicle very smoothly without any impact force. The operation is made be simple that even an unskilled person can handle, by just demonstrating the working of the hydraulic screw jack once.

This is an era of automation where it is broadly defined as replacement of manual effort by mechanical power in all degrees of automation. The operation remains an essential part of the system although with changing demands on physical input as the degree of mechanization is increased.

Bluetooth technology shows its advantage by integrating with smart phones. It has changed how people use digital device at anywhere, and has transferred traditional wired digital devices into wireless devices.

Smartphones have gradually turned into an all-purpose portable device and provided people for their daily use. In recent years, an open-source platform Android has been widely used in smart phones.

Android has complete software package consisting of an operating system, middleware layer and core applications. In this paper we present a review of hydraulic jack controlled by mobile phone or tablets.

II. LITERATURE SURVEY

The paper [1] is about the integrated automated jack for 4 wheelers, i.e. by the single push button provided an automobile jack can be operated. The system consists of three main parts that is hydraulic pump, driven by an electric motor, hydraulic cylinder for vehicle lift. During the breakdown condition hydraulic jacks actuate separately for either side of car. By the oil incompressible of the hydraulic jack the lifting capacity is more compared with the pneumatic system where it operates on air which is compressible. With the single acting cylinders which are controlled by the control valves and the relief valve the circuit has been done.

Paper [2] overcomes the problem of automated car jack. In order to facilitate repairs a device used to raise all or part of vehicle into the air done by an automotive jack. In this work, electric car jack has been used by the current supply from the car battery which makes easy to operate. For the polarity of motor, a switch is provided. As the required torque is applied at the screw the gear ratio provided the torque. The jack is plugged in where 12V Power supply is used to gear up.

Paper [3] gives information on development of auto car jack using internal car power. By the manual force car jack is a mechanical advantage to allow a human to lift a vehicle. The internal cigarette lighter power (12volts) in order to ensure the power is adequate, gear was used. In this paper they have used two relays where it is connected to the motor with the 12V power supply has been used for switch circuit. And implementation the prototype for the modification on the

Maglev Windmill and Solar Powered Generator

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***Abstract*— The traditional wind turbine need very high structures to allow room for their massive blades, hence Maglev Turbines are an ideal solution. It is estimated that renewable sources might contribute about 20%-50%to energy consumption in the later part of the 21st century. Maglev wind turbines have several advantages over conventional wind turbines. For instance, they're able to use winds with starting speeds as low as1.5 meters per second (m/s). Also, they could operate in winds exceeding 40 m/s.**

I. INTRODUCTION

The traditional wind turbine need very high structures to allow room for their massive blades, hence Maglev Turbines are an ideal solution. It is estimated that renewable sources might contribute about 20%-50%to energy consumption in the later part of the 21st century. Maglev wind turbines have several advantages over conventional wind turbines. For instance, they're able to use winds with starting speeds as low as1.5 meters per second (m/s). Also, they could operate in winds exceeding 40 m/s. At present the largest conventional wind turbines in the world produce only five megawatts of power. However, one large maglev wind turbine could generate one GW of clean power, enough to supply energy to 750,000 homes. The paper aims to make a systematic analysis of design and fabrication processes to find out optimum output from the Vertical Axis Maglev Wind Turbine and by also using solar panel for using the solar energy to generate electricity.

II. EASE OF USE

For instance, they're able to use winds with starting speeds as low as1.5 meters per second (m/s). Also, they could operate in winds exceeding 40 m/s. At present the largest conventional wind turbines in the world produce only five megawatts of power.

A. Maintaining the Integrity of the Specifications

Combining latest MagLev technology with PV (Solar) panels gives the best of both worlds for greater independence from costly grid electricity bills. From apartments to street lighting, hybrid systems are starting to bring consistent power to areas worldwide, Maglev turbines are an ideal solution to the traditional wind turbine, which need very high structures to allow room for their massive blades. MagLev technology (so called due to the 'magnetic levitation 'friction free drive) has been around for a while as we know from the Magnetic Levitation high speed trains.

III. WHY WINDMILL AND SOLAR POWERED GENERATOR

Renewable energy is generally electricity supplied from sources, such as wind power, solar power, geothermal energy, hydropower and various forms of biomass. These sources have been coined renewable due to their continuous replenishment and availability for use over and over again. The popularity of renewable energy has experienced a significant upsurge in recent times due to the exhaustion of conventional power generation methods and increasing realization of its adverse effects on the environment. It is estimated that renewable sources might contribute about 20%-50% to energy consumption in the later part of the 21st century.

A. Advantages

Energy is the primary and universal measure of all kinds of work by human beings and nature. Everything what happens in the world is the expression of flow of energy for input to their bodies or to the machines and thinks about crude and electric power. The energy sources available can be divided into 3 types.

B. Parts

- Two ring type neodymium (NdFeB) magnets of grade N-42 of outer diameter 40 mm, inner diameter 20 mm and thickness 10 mm are placed at the center of the shaft by which the required levitation between the stator and the rotor is obtained.
- A stepper motor is an electric motor whose main feature is that its shaft rotates by performing steps, that is, by moving by a fixed amount of degrees. This feature is obtained thanks to the internal structure of the motor, and allows to know the exact angular position of the shaft by simply counting how may steps have been performed, with no need for a sensor.
- The performance of a stepper motor — both in terms of resolution (or step size), speed, and torque — is influenced by construction details, which at the same time may also affect how the motor can be controlled. As a matter of fact, not all stepper motors have the same internal structure.
- In the designed prototype, the stator and rotor are separated in the air using the principle of magnetic levitation. The rotor is lifted by a certain centimeters in the air by the magnetic.

C. Principle

In selecting the vertical axis concept for the wind turbine that is implemented as the power generation portion of this project, certain uniqueness corresponded to it that did not pertain to the other wind turbine designs. The characteristic that set this wind generator apart from the others is that it is fully supported and rotates about a vertical axis

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A stock market analysis using CNN and LSTM in deep learning architectures

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ABSTRACT: Professionals all over the world are fascinated with market forecasting. In addition to statistical models, a variety of current technologies have been used over time. Machine learning and artificial intelligence in general have been at the heart of several market prediction models in recent years. Deep learning algorithms, in particular, have proven to be effective at forecasting market moves. Automatic feature extraction models and time series forecasting techniques have been studied separately, but a layered framework with many inputs has not been thoroughly addressed. In this paper, we propose a methodology for predicting the closing price of the Nifty 50 stock market index using a convolutional neural network (CNN) and long-short term memory (LSTM). To anticipate the movement of the next day, a CNN-LSTM framework collects features from a large feature set and performs time series modeling with a look-up period of 20 trading days. Raw price data from the target index as well as international indices, technical indicators, currency exchange rates, and commodity price data are all included in feature sets, which are all picked based on commonalities and well-known trading setups in the industry. With a mean absolute percentage error of 2.54 percent across 10 years of data, the model is able to capture information based on these traits to forecast the target variable i.e. closing price. The suggested approach improves the typical buy-and-hold strategy in terms of return.

KEYWORDS: Convolutional neural network (CNN) , Long short term memory , Deep learning architecture

I. Introduction

The key platform that permits investors and companies to engage with major economic transactions worldwide, where billions of dollars worth of financial instruments are traded daily, is the financial markets. The stock market has a massive financial impact on the global economy, as evidenced by the market crashes of 2008 and 2020. As a result, it is clear that forecasting future movements is critical for maximizing returns and ensuring financial security. In comparison to the usual buy-and-hold strategy, predicting the market's future even seconds in advance can create significant results. Statistical models were formerly employed to forecast movements, but advances in neural networks and AI in general have allowed researchers and industry to rely on machines to trade securities quickly and profitably. Algorithmic trading has grown more viable as sophisticated computers and high network transfer rates have become available. Hedge funds like Renaissance Trading Corporation have been leveraging big data technology and hidden Markov models to outperform market benchmarks.

When seen from the outside, stock markets appear to be random, yet a big number of traders use candlestick charts to analyse the movement. Technical analysis is a method of assessing market movements based on price actions and candlesticks, which suggests that market moves may have an underlying pattern. Statistical models and rule-based machine learning algorithms have been used to comprehend macro-economic trends, but they haven't been able to capture trends over a longer timeframe. Researchers have attempted to comprehend markets using machine learning algorithms. Researchers have employed support vector machines (SVM) extensively to make trading decisions based on the classification of future price forecasts. [23] demonstrated that a simple artificial neural network (76%) outperformed an SVM kernel in terms of accuracy (72%). Traditional machine learning techniques such as logistic regression, K-nearest neighbours [37], and random forests [28] have also been examined by researchers, but the results have not been promising.

Researchers have also looked into feature extraction or identification models (which is essentially what dimensionality reduction is) and their impact on the performance of standard machine learning methods. The outcomes showed remarkable progress. [14] looked at using the principle component analysis (PCA) dimensionality reduction algorithm to forecast stock market movements. PCA outperforms Gauss-Bayes and the moving average crossover approach, however there are no comparisons with deep learning or other ML models. In [16], it is shown that dimensionality reduction combined with an LSTM network (68.5%) outperformed independent time series forecasting using LSTM (67.5%) with a significantly fewer amount of features. For feature extraction, evolutionary computing algorithms such as the genetic algorithm have been widely used [3, 38]. [38] indicates that genetic algorithms outperform traditional buy-and-hold methods, but that they require a few signals to accurately mimic the stock markets' dynamic and complicated nature. Few scholars have combined support vector machines with genetic algorithms to select the best characteristics among the inputs given to the SVM kernel [11], with the genetic algorithm outperforming the standalone

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Accident Prevention System by Detecting Driver"s Drowsiness using Haar Cascade

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ABSTRACT: In recent years driver fatigue is one of the major causes of vehicle accidents in the world. A direct way of measuring driver fatigue is measuring the state of the driver i.e. drowsiness. So it is very important to detect the drowsiness of the driver to save life and property. This project is aimed towards developing a prototype of drowsiness detection system. This system is a real time system which captures image continuously and measures the state of the eye according to the specified algorithm and gives warning if required.
Though there are several methods for measuring the drowsiness but this approach is completely nonintrusive which does not affect the driver in any way, hence giving the exact condition of the driver. For detection of drowsiness the percentage closure value of eye is considered. So when the closure of eye exceeds a certain amount then the driver is identified to be sleepy. For implementing this system several OpenCv libraries are used including Haar-cascade.

KEYWORDS: Driver fatigue, Accidents, Driver drowsiness detection system, non-intrusive, OpenCv, Haar-cascade

I. Introduction

The attention level of driver degrades because of less sleep, long continuous driving or any other medical condition like brain disorders etc. Several surveys on road accidents says that around 30 percent of accidents are caused by fatigue of the driver. When driver drives for more than normal period for human then excessive fatigue is caused and also result in tiredness which drives the driver to sleepy condition or loss of consciousness.
Drowsiness is a complex phenomenon which states that there is a decrease in alerts and conscious levels of the driver. Though there is no direct measure to detect the drowsiness but several indirect methods can be used for this purpose. To detect alcohol consumption by driver, if the alcohol level sensed is above threshold the engine will not start and it will alert that the alcohol consumption is high.
Fatigue warning systems (FWS) have been proposed as specific countermeasures to reduce the collisions associated with driver fatigue. These devices employ a variety of techniques for detecting driver drowsiness while operating a vehicle and signal a driver when critical drowsiness levels are reached. However, the detection of driver fatigue using valid, unobtrusive, and objective measures remains a significant challenge. Detection techniques may use lane departure, steering wheel activity, ocular or facial characteristics.
Along with this of course, Drivers have a duty not to exceed speed limits, exceed maximum work limits or breach minimum rest requirements. Complementing this, entities within the chain of responsibilities must take reasonable steps to prevent driver fatigue or situations that lead to drivers breaching speed limits. It provides extensive information on the alertness, driving performance, and physiological and subjective states drivers

II. Related work

This survey which has been done includes the present technologies and researches available related to the topic of our work. It is an attempt to better understand the efforts that have gone into this field of study, and also to understand where our efforts should be focused on while developing this project. Driver's drowsiness detection has been a topic of research for a long time, with many different approaches being studied thus so far. This review has been carried out on the topic of the current drowsiness detection technologies for facial landmark detection [1], blink detection, and yawn detection, across many techniques to carry out drowsiness detection, which includes deep CNN [2], Computer Vision [3], Behavioral measures, and machine learning techniques all with different advantages, challenges, and different levels of accuracy. Research has been done on EAR and MAR-based technologies for blink detection and yawn detection respectively. From [4] titled "Computer Vision based drowsiness detection for motorized vehicles with Web Push Notifications". In this paper, they have designed a drowsiness system that is based on computer vision for vehicles with alarm sounds and web push notifications. These notifications will alert the driver to prevent the accident from occurring. The system is also designed to generate an alert that shows nearby coffee shops which will increase the alertness of the driver. As a result, the system detected the driver's drowsiness and showed successful performance in the trial run. The Eye Aspect Ratio was used to detect if the eyes are closed or open. Then, a buzzer was used to generate an alert and a web push notification was sent to the user which shows the nearby coffee shops. The work presented in [5] takes advantage of some mouth geometrical features to detect yawning. The work in [6] proposes the detection of the face region using the difference image between two images. Driver's yawn is then detected based on

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Phishing Threat Avoidance Behaviour

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ABSTRACT: Phishing is done by confusing the user and thereby leads to virus contaminated link sites . Phishing is often done by email spoofing or texting, and it usually guides user to enter points of interest at a fake site which looks same as the original one. Fake e-mail is often legitimate, and the website that asks the Internet user to provide personal information is also legitimate. These phishing messages spread over e-mail, SMS, instant messengers, social networking sites, and so forth, but e-mail is the popular way to execute this attack and 65 percent of the total phishing attack is achieved by visiting the hyperlink which are attached with the emails. A mobile game prototype design and development is reported in this seminar, helping computer users to protect themselves from phishing attacks. The elements of the game design framework for avoiding phishing attacks were used to address the game design issues. To promote self-avoiding behaviour in order to protect itself against phishing threats, the mobile game is aimed to be designed. Mobile games will help you to fix learning in a natural environment. To help prevent phishing attacks, home computer can be helpful by setting up a cyberspace as a safe environment by educating the home computer users.

KEYWORDS: **Internet; Personal Data; phishing; spoofing; hyperlink; Mobile Game; Cyberspace**

I. Introduction

Internet technology offers modern life like shopping, communication, network, personal computers, entertainment through smart phones. Hacking and other security violations increases as people increases the reliability of Internet. Inorder to make cyberspace as a safe environment, computer users are playing a crucial role in it. This paper mainly focusses on how to protect the safety of human security to avoid cyberbullying in usage of computer. Malwares, viruses, spam mails , ddos attacks and phishing are the major cyber threats. This may be done for social or economic benefits. Phishing is a form of semantic attack. This is done inorder to steal the information such as usernames, passwords, net banking details, etc.. For visiting counterfeit copies of legitimate websites during phishing attacks unknowingly the phishing emails are used by the victims. With the objective of preventing from phishing, developers created anti-phishing tools which are automated. These devices use alerts about fraud mails and sites. For eg. Neteraft anti-phishing toolbar, Calling id toolbar, Earth link toolbar, Clouds anti-fraud toolbar, eBay toolbar,etc.. Eventhough top most anti-phishing systems could miss twenty percent of phishing sites. Authors discloses that the user is not guaranteed that there is a secure connection established between browser and the user and the browser will always tell the truth. So the users must be aware while making any decisions with the help of data collected from browsers . Thus user should depends on a trustworthy path inorder to make a trusted decision. Phishers and security experts are on a road now a days. On one hand security measures to prevent phishing are improved with the help of the application developers and on the other, phishers are pursuing new techniques. However, in information security, weak point is "human". Based on human weakness, they are changing their tactics for phishing. Enhancement of phishing attacks beyond the individuals are directly targetted. Organizations that impersonate such attacks spend enormous resources to reduce their losses, and security institutions and researchers must work together to resolve the complexity in phishing.
This paper is discussing about a game prototype which may helps in antiphishing. In a natural environment, mobile games can facilitate to embed learning. This seminar report introduce a gaming prototype for the android platform. For detailing the game design issues, elements of game design framework was used. To structure and present information, game design principles was used. Generally, for improving the avoiding behaviour of users and for protecting themselves from phishing attack, the game was designed.

II. Related Work

Many researches that has been done indicates that technology alone is insufficient to address critical IT security challenges. Till now, there has been only a few works published on the human aspect of people performing security checks and protecting themselves from various attacks which are imperative to cope up with cyber-threats such as phishing attacks (Alsharnouby, Alaca, & Chiasson, 2015; Anderson & Agarwal, 2006; Arachchilage & Cole, 2011; Arachchilage & Love, 2014; Aytes & Terry, 2004; Ion, Reeder, & Consolvo, 2015; Liang & Xue, 2009; Liang & Xue, 2010; Ng & Rahim, 2005; Susan, Catherine and Ritu, 2006; Woon et al., 2005; Workman et al., 2008). Many discussions related to information security have ended with conclusions similar to the one by (Gorling, 2006): "if we could only remove the end-user from the system we would be able to make it secure". Where it is impossible to

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Innovative Creation for Disabled & Intuitive Operation by Developing Haptic Prosthetic Hand Using AI and IoT

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ABSTRACT: Day by day, with a growing older population and struggle veterans, the disabilities of a person are increasing and even human beings lost their hand throughout bomb diffusion. Disabled frame components can be o any reason like lost accidently, start bodily incapacity and so on. Particularly, Prosthesis is a synthetic method that i used to replace a disabled body component. Prostheses are commonly used to update and offer complement t disabled defective body part .The principle goal of the paper is to provide haptic prosthetic hand who misplaced thei hand accidently or born with physical disability at less expensive fee as loss of cash have to no longer restrict th humans to apply strengthen era. For safety, this hand can also be used for various intuitive operations like in roles o public safety bomb disposal (PSBD), and many others. The principle requirement is that its characteristic needs to be a natural as actual arm. The haptic prosthetic hand has multi stages Degree of freedom (DOFs) and is used to understand intuitive operation for environmental model so that it may adapt to the shape of an object with flexibleness. There ar various designs of artificial arm that are available in the marketplace, classified as electric, mechanical and myo electric arm. Mechanical prostheses use a few motion of the body to provide the energy important to control th prosthetic aspect. On this paper, a detailed design and implementation of a microcontroller based totally machine tha may apprehend human hand gestures and interface of microcontroller based totally embedded subset with prototyp prosthetic hand to the voice instructions is proposed. This paper will mostly on the improvement and production of th prototype of the Prosthetic hand.

KEY WORDS:Degree of Freedom(DOFs); Haptic Prosthetic Hand; IntutiveOperation; Microcontroller; Flex Sensor

I. Introduction

A prosthetic limb is a device that is used to replace a missing body component. A prosthetic arm is a replacement arm for people who have had their arms amputated. On the patient's body, there is a prosthetic. The prosthesis chosen i determined by the extent of the amputation and the availability of the residual limb in relation to the patient's body par to control and power the function. Earlier armouries primarily used prosthesis to handle swords and shields in battle After World War II, modern prosthetic principles emerged. The first myo-electric switch was invented in 1949. Because most research has concentrated on externally powered prosthesis and high manufacturing costs have also been a major issue, body powered prosthetic components have remained relatively unchanged.In the early 1990s, the firs microprocessor-controlled prosthetic knees became available. The Intelligent Prosthesis was the first microprocessor controlled prosthetic knee to hit the market. In 1993, the British company Blatchford & Sons, Ltd. improved the fee and appearance of walking with prosthesis.Intelligent Prosthesis Plus, an enhanced version, was released in 1995. Th Adaptive Prosthesis was released by Blatchford in 1998 [1]. Hydraulic, pneumatic, and microprocessor controls were used to give control action in the Adaptive Prosthesis.

In today's fast-paced environment, a disabled person who is reliant on others is sometimes viewed as a burden. As a result, being reliant on daily activities or even the tiniest of actions can lead to an emotional imbalance and a drop in self-esteem. This challenge can be handled to some degree thanks to advancements in the robotics and electronic industries. Prosthetic limbs have been manufactured previously, but they are rather costly.

Despite the high accuracy and dependability, the economically disadvantaged are denied access to such technologies Despite the fact that science and technology have been constantly improving over the years, we have been able t locate a suitable solution for such high-tech devices. Our concept may not be able to perform as many functions a currently available on the market, but it might be utilised as a temporary solution until a more suitable and affordable technology can be found. Given that the majority of patients cannot afford these costs, our study aims to provide a low cost alternative prosthetic arm that can execute limited human tasks without requiring assistance.

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Detection of cracks present on railway track using Deep Learning

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ABSTRACT: For better inspections and security, we need an efficient railway track crack detection system. In this research, we present a computer vision-based technique to detect the railway track cracks automatically. This system uses images captured by a rolling camera attached just below a self-moving vehicle in the railway department. The source images considered are the cracked and crack-free images. The first step is pre-processing scheme and then apply Gabor transform. In this, first order statistical features are extracted from the Gabor magnitude image. These extracted features are given as input to the deep learning neural network for differentiate the cracked track image from the non-cracked track image. Accuracy of the proposed algorithm on the procured images is 94.9 % and an overall error rate of 1.5%.

KEYWORDS: Convolution Neural Network, Open CV, Gabor Transform, Image processing.

I. INTRODUCTION

This Railway move strategy is an exceptionally normal stage for public transportation and products in numerous nations. This standard transportation line uses metallic rail tracks or lines which are connect to the rail course sleepers by using extraordinary sort of metallic anchors or snares. Rail route sleepers are parallelogram molded help which assists with moving the rail lines still. These were at that point wooden made and at present most of them have been replaced with pre-zeroed in on strong assistance which increase the and robustness of the tracks. Still in various countries, we are going up against railroad accidents achieved by fire in trains, crashes, influences, running into deterrents, etc. In 1998-2012 Bangladesh Rail line, starting there was 4666 train disasters occur in outright where 4287 were an immediate consequence of accidents. Subsequently, for all intents and purposes 92% of disasters about by crashes which show its repeat is exceptionally high. Crash happens in view of frail advancement Crack, missing of rail course catches, vulnerable rail tracks, etc Extension breaks are the breaks which are deliberately close between the rail terminations to consider advancement of the rails in warm environment. These breaks have some help size between the 7.5mm to 8mm and anything past that span is consider as risk. The conditions of these holes are evaluated genuinely by a gathering of railroad laborers and architects coming the track. As such its especially drawn-out and the quality, capability of work contrasts starting with one individual then onto the next. To speed up this cycle, to give consistent extraordinary quality and to restrict the human badly, this paper hopes to find a response through programming that will screen the holes and rail tracks quality using picture taking care of also, choose if they are in adequate condition or not. In the underlying portion, where the ID of development holes. There are three basic methodologies are picture division, information extraction and subsequently investigation and assessment. After that the huge thing is picture division. It's a fundamental measure which is utilized to division an image into section part and these preferably relate to various genuine world things. Subsequently, basically, picture division is the way toward division an electronic picture changed over to various parts where the goal is to improve and change the depiction of picture to something more huge what's more, less difficult to research subject to our specific prerequisites. There are various strategies for picture division. Here we use morphological action to fragment. Before applying that, we endeavored various substitute techniques for picture division like, Limit based procedures, for instance Shading based Division, K-suggests grouping, Otsu's discovery. We can break down the two result and pick the best one for extra planning, system, etc.

To check out and find the best partner for our work which offers us to more precision than others. This system of morphological taking care of is dealing with the conditions of articles fundamentally to transform it and we can work on viewpoint on holes and rail lines with it Morphological Process is furthermore called as numerical morphology. Such managers comprise of some closeness model, in deciding for each place of the examined picture, another dim level between two structure. This morphological separation has been by and large pondered, no procedures, as indicated by the point of view MM, ready to do meanwhile normalizing and expanding the distinction of pictures with unfortunate lighting. Anyway, the major obstruction of histogram evening out is that the overall property a strategy to create rather than anticipated; this approach comprises of decide an improvement issue that proverb the normal general differentiation of an image. According to this explanation we can set up that, numerical morphology will work in the different ecological condition to give us the typical results. Following setting up the picture we can take the data; we get the actually divided yield which is ready for information extraction. At the point when the division is finished successfully, we applied Sobel edge location and crevice's edge.

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Cyber security In Smart City: A Systematic Mapping Study Using IOT

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ABSTRACT: The idea and philosophy of smart cities were launched specifically to take advantage of the qualitative technological capabilities to overcome the obstacles and problems associated with the huge urban development and the boom that humanity is experiencing in recent years, especially sustainability, congestion, transportation, and various energy uses. In addition, these smart cities seek to improve the level of living and provide life services in a modern form, such as health care, enjoying a more integrated transportation service, reducing environmental pollution and other services. There is a direct relationship between technology development and Cybersecurity threats as it constitutes a major obstacle to achieve these benefits. This paper demonstrates the benefits and opportunities of smart cities along with the challenges, threats, and possible solutions of Cybersecurity in smart city.

KEYWORDS: Smart city; IOT; cybersecurity; threats; controls; Cyber attack; Cyber Threats, Cyber Attack Solution

I. INTRODUCTION

As the population increase, the necessity of people also increases; which leads the way to increase the digitalization across the city to reduce the newly rising issues (e.g., traffic congestion, waste management, environmental pollution, vehicle parking allocations, etc). A recent survey confirmed that 55% of the world population lives in urban areas and it may increase up to 66% by 2030. Many researchers in elaborated that smart cities give the most possible solutions to the previously mentioned issues when the population increases to enhance urbanization and the necessity of sustainability. In this manner, a city providing services to improve the qua lity of life through information and communication technology such as smart governance, smart transportations, smart industries, smart healthcare, smart buildings, smart grid, etc called a smart city. These services can be developed by the technologies In ternet of Things and cloud computing via sensors, actuators, and smart devices. That is, data from the objects upload to the cloud storage through sensors for processing and predictions.It must be taken into the consideration the safety of urban and the be neficiaries while developing the smart city. Even though smart city development increases in many urban cities, increase the quality of life, and improve the economy of the country; at the same, it creates many security and privacy -related questions among the stakeholders due to the data security and data privacy issues.

II. RELATED WORK

The main challenge facing smart cities is cybersecurity[1]. Cybersecurity is concerned with the protection of data, as well as the software and infrastructure used to store, process, and transmit these data. It is understood to be the process of preventing, detecting, and reacting to cybersecurity incidents to protect data and information [2]. A smart city uses technologies such as IoT and IOE to run its services and applications. These technologies can become a threat, as when a security vulnerability is found and exploited, basic services may not function properly or be interrupted, for example, water and energy supplies. Likewise, unauthorized access to sensitive data can lead to major breaches of privacy, for example, access to sensitive data records of citizens [3]. This paper conducted to ravel out the benefits and opportunities of smart cities along with the challenges, threats and vulnerabilities of cybersecurity in the smart city by reviewing the previews studies related to this field. Besides, identifying and analyzing the major cybersecurity attacks in smart cities environment. Smart cities include many systems and devices that are linked via different technologies, so the amount of data these systems generate can be very huge. If these systems and devices are not immunized, this can lead to significant damage and risks as unprotected data and user information may facilitate disruptive activities and cybercrime. Therefore, in this paper, we highlight the most prominent risks related to cybersecurity in smart cities, while presenting proposed solutions to confront these risks. These are a few cyber security issues but many need to be exposed. In that manner, the following are the major Cybersecurity issues arising in the smart cities; Denial of Service (DoS) attacks, unauthorized network access, theft of personal information, online financial fraud, website defacement, application -layer attacks, and penetration attacking. Cyber attackers attempt to change the nature of the data which were collected through IoT in the smart city and trying to reveal citizen's private information and increase the risk of their safety by using those cyber security issues; this kind of cybercrimes was conducted many times by the cybercriminals earlier. Although, there were many security techniques used to reduce these risks such as password authentication and biometric authentication. The concept of a smart city aims to enhance the quality of life of the residents, increase the use of urban services, improve sustainability and minimize environmental harm. To realize the goals of smart cities, this concept relies on a recipe of competence and optimization strategies ,technical innovations, and both historical and life data.

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Real-Time Control Using Convolution Neural Network for Self-Driving Cars

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ABSTRACT: In this we perform an Autonomous deep learning robot using an end-to-end system. The system operates as the controller for navigating and driving automatically. The deep learning robot used Convolution Neural Network (CNN). The CNN architecture is Mobile net with Softmax activation function. The Softmax activation function predicts the probability of steering angles. In the training phase, the CNN model learns from images and steering angles that are collected during the driving. In the testing phase, we apply the diversified environment to the trained CNN model. The CNN model accuracy is up to 85.03%. The results showed that the CNN is able to learn the diversified tasks of lanes and roads following with and without lane marking, direction planning and automatically control. Also the CNN can replace the conventional PID controller

KEYWORDS: Convolution Neural Network, Deep Learning, KNN, ANN.

I. INTRODUCTION

Applications of artificial intelligence and machine learning are increasingly widespread and penetrate all fields including in the field of autonomous cars. The development of autonomous cars which are currently being developed by many technology companies such as Waymo and Uber is starting to lead to the use of artificial intelligence and machine learning to replace the conventional systems which require very expensive equipment such as LRF, lidar, GPS for detecting the surrounding . Many researches of autonomous cars are currently being progress to ensure the safety of autonomous cars before they are launched to the public. A car with a driver provides a sense of safety and comfort for passengers where the driver can control the car well and meet safety standards. The challenge of autonomous cars today is how to produce a model of driving behaviour that is the same as humans so that it still provides a sense of safety and comfort for passengers. Artificial intelligence and machine learning approaches have proven successful in areas of image classification such as facial and image recognition systems. This classification system approach will be used for the recognition of the surrounding environment in determining the direction and movement of autonomous cars. Machine learning with images as inputs is achieved by Convolutional Neural Networks (CNN), which has become dominant in various computer vision tasks including autonomous car.

II. RELATED WORK

CNN is a form of Deep Neural Networks (DNN) that is mainly used for analysing visual data Unlike the usual full connected to neural networks, CNN makes use of pattern recognition to analyse data, starting with small patterns and using increasing convolutional layers, work to analyse bigger more complex pattern. Connections can be compared to biological processes with respect to how CNN processes imagery it is theorised that human visual cortex uses a similar mechanism to creating relationships between shapes and objects that humans recognise. There is often little arithmetic required to prepare images and/or data to feed into a CNN, as during the training of the network, the network learns the filters essential to analysing the image. The difficulty of the patterns that can be recognised by a CNN is often hinged on the number of layers. There is a sum of applications for CNN, though it is mainly used for image and video analysis, it has of recent been used widely in natural language recognition. It is a commanding tool for autonomy as in contrast with old forms of handcrafting algorithms to automate actions, CNN is can be trained to on formatted sets of data and when applied correctly is capable of making more generalised decisions.

Neural network-based CV has established a reputation for being much simpler to develop. No handcrafting of processes is necessary, as the network learns to recognise data from the scene through structured and labelled datasets. This is where the limits are in neural network-based CV, as a model is only as good as the quality and accuracy of the dataset used for training. Therefore, it is critical to ensure that training datasets are accurate and covers many conditions. Having a dataset that extends a large variety of conditions ensures that the model learns general features when extracting data from a scene, as opposed to overfitting specific circumstances difficult to extract from more compound patterns and information from a scene. It has still advanced to a stage where facial detection, as well as other forms of object detection, is possible. It is very difficult to extract from more compound patterns and information from a scene. It has still advanced to a stage where facial detection, as well as other forms of object detection, is possible.

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Using IoT and machine learning, secure online monitoring for digitalized Gas Insulated Switchgear against cyber-attacks

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ABSTRACT: Recently, the Internet of Things (IoT) has an important role in the growth and development of digitalized electric power stations while offering ambitious opportunities, specifically real-time monitoring and cybersecurity. In this regard, this paper introduces a novel IoT architecture for the online monitoring of the gas-insulated switchgear (GIS) status instead of the traditional observation methods. The proposed IoT architecture is derived from the concept of the cyber-physic system (CPS) in Industry 4.0. However, the cyber-attacks and the classification of the GIS insulation defects represent the main challenges against the implementation of IoT topology for the online monitoring and tracking of the GIS status. For this purpose, advanced machine learning techniques are utilized to detect cyber-attacks to conduct the paradigm and verification. Different test scenarios on various defects in GIS are performed to demonstrate the effectiveness of the proposed IoT architecture. Partial discharge pulse sequence features are extracted for each defect to represent the inputs for IoT architecture. The results confirm that the proposed IoT architecture based on the machine learning technique, that is the extreme gradient boosting (XGBoost), can visualize all defects in the GIS with different alarms, besides showing the cyber attacks on the networks effectively. Furthermore, the defects of GIS and the fake data due to the cyber-attacks are recognized and presented on the dashboard of the proposed IoT platform with high accuracy and more clarified visualization to enhance the decision-making about the GIS status.

KEYWORDS: Gas-insulated switchgear (GIS), XGBoost, Cyber-physic system (CPS), IOT.

INTRODUCTION

Machine learning for IoT can be used to project future trends, detect anomalies, and augment intelligence by ingesting image, video and audio. Machine learning can help demystify the hidden patterns in IoT data by analyzing massive volumes of data using sophisticated algorithms. Machine learning inference can supplement or replace manual processes with automated systems using statistically derived actions in critical processes. Companies are utilizing machine learning for IoT to perform predictive capabilities on a wide variety of use cases that enable the business to gain new insights and advanced automation capabilities. Practically, gas-insulated switchgears (GISs) have a superior interruption and insulation performance compared to traditional airinsulated switchgears. Specifically, GISs require low spacing while yielding decent environmental compliance, thereby extensively being the preferable option for main substation components. Recently, the general electric system infrastructure has started to approve digital information technologies. Interestingly, the digital substation can provide reduce maintenance necessities and the need for long conventional cabling and other electrical apparatus. These benefits are achieved by combining the newest electrical gear with digital sensors as well as cloud computing. As a result of this digitalization trend, the cyber physic system (CPS) becomes essential to ensure the continued operation of GISs in a digitalized substation and so the entire power system. In this regard, it has become a worldwide tendency that power system equipment access to the cloud, with the growth of the Internet of Things (IoT) and cloud platform systems. Its main merit is to appreciate value-added services by online remote monitoring, smart operation, and effective maintenance and diagnosis strategies. In particular, the IoT arrangement contains several evolving technologies that empower wireless interconnections between physical components. The collected data by digital sensors are passed to IoT components e.g. users, industrial equipment, and personal devices. In 2020, the number of intelligent devices that utilize IoT was estimated to be 30 billion globally.

RELATED WORK

In [1] Author proposed a work called Modularization of high voltage gas insulated substations that aims to many existing petrochemical facilities are replacing old high voltage (HV) air insulated switchyards (AISs) with new gas insulated switchgear (GIS) substations. Modularization or prefabrication has strategic advantages over site-built substations. In [2] Author proposed the electromagnetic wave behavior due to partial discharge in gas insulated switchgears. The rapid growth of gas insulated switchgears as a compact, efficient, and reliable device has recently been given great attention. Albeit gas insulated switchgears can seldom suffer from failure due to the high resiliency and robustness, some severe damages have been experienced by such devices particularly in the event of partial discharge. Thus, monitoring such accidents has become a vital part of power systems reliability. In [3] Author designed an intrusion detection against MMS-based measurement attacks at digital substations. Information and Communications Technology

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Blind Assistance System Using Internet of Things

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ABSTRACT: A Smart blind assistance system concept is devised to provide a smart electronic aid for blind people. Blind and visually impaired people find difficulties in detecting obstacles during walking in the street. The system is intended to provide artificial vision and object detection by making use of Raspberry Pi. The system consists of ultrasonic sensors, and the feedback is received through audio, voice output works through TTS (text to speech). The proposed system detects an object around them and sends feedback in the form of speech, warning messages via earphone. The aim of the overall system is to provide a low cost and efficient navigation and obstacle detection aid for blind which gives a sense of artificial vision by providing information about the environmental scenario of static and dynamic object around them, so that they can walk independently. It is a device in the form of a stick that has ultrasonic sensors and raspberry pi installed on it. This device detects obstacles around the user up to 50cm in three directions i.e. front, left and right using a network of ultrasonic sensors. These ultrasonic sensors are connected to raspberry pi that receives data signals from these sensors for further data processing. The algorithm running in raspberry pi computes the distance from the obstacle and converts it into text message, which is then converted into speech and conveyed to the user through earphones/speakers.

KEYWORDS: Image processing; Machine Learning; IoT; Object Detection; Navigatio.

I. Introduction

Electronic Travel Aids are the devices which are used for mobility. The function of ETA is to provide information to the blind people about road and obstacles. Our smart walk stick is also an ETA which helps the blind people to know about the objects opposite to them, color of the objects, and text reading. In this smart walking stick we use Raspberry pi to control the sensors and camera. The feature of object identification helps the blind people to recognize what kind of object is before them and helps them to move around safely. Text reading helps them by reading out the reading out the texts before them and finally color identification helps them to identify the colors before them. These are all done using technique of digital image processing by using compute vision2. This smart walk stick is light weight to carry around and this helps the blind people to move around as a normal people.

The aim of this project is provide assistance to blind or visually impaired people to move around without help of others. This device provides alert to the user, of obstacles in their path. It also converts image to voice and gives output in speech to the user. It applies to for Blind or visually impaired people also for old people with decreased or minimal vision. Commuting in crowded environment is a challenge for visually impaired people. Visually impaired people are at disadvantage because they do not have access to any contextual and spatial information around them. In terms of sensors these projects use proximity sensors, infrared sensors, laser diode, etc., which are affected by external atmospheric such as sunlight, rain, dust and may not function properly in outdoor environment. Commuting in crowded environment is a challenge for visually impaired people.

II. Related Work

In [1] Author proposed a work that aims to design and develop a device which guides the user by sensing obstacles in identify all obstacles in the path with the help of various sensors installed in it. It is the smart stick. Traditionally they have been using the conventional cane stick to guide themselves by touching/poking obstacles in their way. This causes a lot of accidents and hence is dangerous for them and others. It is a device which guides the user by sensing obstacles in the range of stick. It will identify all obstacles in the path with the help of various sensors installed in it. In [2] Author proposed a autonomous walking stick for the blind using echolocation and image processing he smart walking stick, the Assistor, helps visually challenged people to identify obstacles and provide assistance to reach their destination. The Assistor works based on the technology of echolocation, image processing and a navigation system. The Asistor may serve as a potential aid for people with visual disabilities and hence improves their quality of life. The Assistor uses ultrasonic sensors to echo sound waves and detect objects An image sensor is used to identify the objects in front of the user. In [3] Author designed a assistive infrared sensor has smart stick for blind people. The Smart stick comes as a proposed solution to improve the mobility of both blind and visually impaired people. Stick solution use different technologies like ultrasonic, infrared and laser but they still have drawbacks. A pair of infrared sensors can detect stair cases and other obstacles presence in the user path, within a range of two meters. The experimental results achieve good accuracy and the stick is able to detect all of obstacles. In [1] Author proposed an Embedded Assistive Stick for Visually Impaired. Presented an embedded assistive stick for visually impaired persons with an smart stick is intended and executed to aid blind persons so that they can walk independently without much difficulty.

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Detection Of Plant Leaf-Disease Using Convolution Neural Network and Machine Learning

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ABSTRACT: Crop production problems are common in India which severely effect rural farmers, agriculture sector and the country's economy as a whole. In Crops leaf plays an important role as it gives information about the quantity and quality of agriculture yield in advance depending upon the condition of the leaf. In this we proposed the system which works on preprocessing, feature extraction of leaf images from plant village dataset followed by convolution neural network for classification of disease and recommending Pesticides using Tensor flow technology. The main two processes that we use in our system is android application with Java Web Services and Deep Learning. We have use Convolution Neural Network with different layers five, four & three to train our model and android application as a user interface with JWS for interaction between these systems. Our results show that the highest accuracy achieved for 5-layer model with 95.05% for 15 epochs and highest validation accuracy achieved is for 5- layer model with 89.67% for 20 epochs using tensor flow.

KEYWORDS: Convolution Neural Network, Machine Learning, KNN, ANN, Tenser flow Technology.

I. INTRODUCTION

Agrarian efficiency is something on which economy profoundly depends. This is the one of the reasons that disease recognition in plants assumes a significant job in agribusiness field, as having disease in plants are very characteristic. In the event that appropriate consideration isn't taken here, at that point it causes genuine impacts on plants and because of which individual item quality, amount or efficiency is influenced. Recognition of plant sickness through some autoprogrammed strategy is useful as it diminishes a huge work of observing in huge ranches of crops, and at beginning period itself it identifies the side effects of sicknesses for example at the point when they show up on plant leaves. Innovation helps individuals in expanding the generation of food. Anyway the generation of food can be influenced by number of factor, for example, climatic change, infections, soil fruitfulness and so forth. Out of these, disease plays major job to influence the generation of food. Agriculture plays an significant job in Indian economy. Leaf spot infection debilitate trees and bushes by intruding on photosynthesis, the procedure by which plants make vitality that support development and guard frameworks and impacts survival.

Over 58% smallholder rancher relies upon horticulture as their head methods for occupation. In the creating scene, more than 80 percent of the agrarian creation is produced by smallholder ranchers, and reports of yield loss of more than half because of vermin and illnesses are common. The creation is diminishing step by step with different variables and one of them is sicknesses on plants which are not identified early arrange.

II. RELATED WORK

In 2017, Monzurul Islam, Anh Dinh, Khan Wahid ,Pankaj Bhowmik present an approach that coordinates picture preparing and AI to permit diagnosing ailments from leaf pictures. This computerized technique groups sicknesses (or nonappearance thereof) on potato plants from an openly accessible plant picture database called 'Plant Town'. Our division approach and usage of help vector machine show sickness grouping more than 300 pictures with a precision of 95%. In 2017, Vijai Singh A.K Misra exhibits a calculation for picture division method which is utilized for programmed identification and order of plant leaf illnesses. It moreover spreads overview on various infections characterization strategies that can be utilized for plant leaf illness identification. Picture division, which is a significant angle for sickness discovery in plant leaf illness, is finished by utilizing hereditary calculation. In 2016, Sharada Prasanna Mohanty,David Hughes and Marcel Salathe Utilizing an open dataset of 54,306 pictures of ailing and sound plant leaves gathered under controlled conditions, they train a profound convolutional neural system to distinguish 14 harvest species and 26 ailment (or nonattendance thereof). The prepared model accomplishes an exactness of 99.35% on a held-out test set, exhibiting the practicality of this methodology. In 2016, Davoud Ashourloo, Hossein Aghighi, Ali Akbar Matkan, MohammadReza Mobasheri, and Amir Mocini Rad uses the spectra of the contaminated and non tainted leaves in various infection manifestations were estimated utilizing a non imaging spectroradiometer in the electromagnetic district of 350 to 2500 nm. So as to deliver a ground truth dataset, we utilized photographs of an advanced camera to figure the infection seriousness and ailment manifestations portions. At that point, extraordinary test sizes of gathered datasets were used to

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Heart Monitoring System Based on IoT and Supervised Machine Learning

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ABSTRACT: There are multiple factors that affect the health conditions of every individual and some diseases are detrimental and cause loss of life. Heart disease is one such critical disease that affects people of different age groups. In this paper, a pre-processing technique is proposed to improve the accuracy of the classification of ECG signals. We are proposing a healthcare monitoring system consisting of ECG Sensors. The parameters which are having a significant amount of importance are sensed by the ECG sensors which are vital for remote monitoring of the patient. A web-based user interface observation is used to continuously monitor the ECG of the patient and various data extraction techniques are performed on the ECG wave to extract attributes to correctly predict heart diseases. Data mining with its various algorithms reduces the extra effort and time required to conduct various tests to detect diseases. Data is collected from ECG sensors, Temperature sensors, and Pulse sensors. The data is stored in a storage medium where data mining algorithms are performed on the data collected. These algorithms predict whether the patient has any heart disease. The results can be referred by the doctors for diagnosis purposes. By using machine learning algorithms, the prediction of heart disease is done in the system.

KEYWORDS: ESP8266, Pulse Rate, Temperature, Healthcare, ECG sensor, and Internet of Things.

I. INTRODUCTION

Internet of Things has become an essential part of human beings and it is used in all domains such as education, business, finance, social networking and healthcare, etc. The healthcare industry has been adopting new technologies for providing better and smart healthcare facilities. With the IoT, remote and real-time monitoring of patients is made possible and this unleashes the potential to continuously monitor the health and helps the physicians to give suggestions or treatment in a timely manner. As a larger community of people is suffering from heart disease, it is vital to carry out diagnosis at the early stage to save lives and help to support a healthy lifestyle of people. The health care monitoring has improved tremendously due to the development of different IoT capabilities and instruments to track patient's health conditions regularly. The patients can also interact with the doctor more easily which gives the satisfaction of treatment and it also reduces the hospital stay and healthcare expenses. There is a rise in the need for a portable system that can be used at home by the patient for measuring their ECG profiles and diagnose their disorder in real-time. So in this paper, an extensive review is carried out to find the existing technologies that are available for monitoring heart related diseases. It is understood from the analysis, that the collected raw data contains noise and irrelevant contents. These are irrelevant and incorrect data that are not useful for diagnosis. This noise and huge variation in data leads to reduction in the classification accuracy, sensitivity and precision. Therefore, in this paper a novel pre-processing approach is used to remove noise and unrelated data from ECG signals. Relevant attributes are identified using correlation technique to enhance data efficiency. The machine learning classifier algorithm such as KNN, naïve Bayes, Decision tree and Random Forest are used for classifying the ECG signals based on waveforms. The classifier that obtains better performance metrics can be used for diagnosing the variation in the ECG waveform and identify the type of abnormality and disorders.

II. RELATED WORK

In [1] K. Chandra Shekar, Priti Chandra and K. Venugopala Rao An Ensemble Classifier Characterized by Genetic Algorithm with Decision Tree for the Prophecy of Heart Disease This paper tried to analyze the heart disease dataset using important types of data mining techniques in order to create a 100% accurate model based on a data mining algorithm. This paper provides a systematic scheme for heart diseases, and the relevant healthcare data is created by the use of the UCI Repository dataset. Supervised learning is used for prediction.

In [2] Anjan Nikhil Repaka, Sai Deepak Ravikanti, Ramya G Franklin Design and Implementing Heart Disease Prediction Using Naives Bayesian Here, three phases are applied to get prediction of heart diseases. Pre-processing is applied to first phase. In which data are filtered. In second phase different classification techniques are applied on output of phase one. Classification accuracy, precision, recall and measure will be used to evaluate the efficiency of the used techniques. Then they choose the highly efficient algorithms from the applied algorithms.

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One-Dimensional CNN Approach for ECG Arrhythmia Analysis in Fog-Cloud

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ABSTRACT: Cardiovascular diseases are considered the number one cause of death across the globe which can be primarily identified by the abnormal heart rhythms of the patients. By generating electrocardiogram (ECG) signals wearable Internet of Things (IoT) devices can consistently track the patient's heart rhythms. Although Cloud-based approaches for ECG analysis can achieve some levels of accuracy, they still have some limitations, such as high latency. Conversely, the Fog computing infrastructure is more powerful than edge devices but less capable than Cloud computing for executing compositionally intensive data analytic software. The Fog infrastructure can consist of Fog-based gateways directly connected with the wearable devices to offer many advanced benefits, including low latency and high quality of services. To address these issues, a modular one-dimensional convolution neural network (1D-CNN) approach is proposed in this work. The inference module of the proposed approach is deployable over the Fog infrastructure for analysing the ECG signals and initiating the emergency countermeasures within a minimum delay, whereas its training module is executable on the computationally enriched Cloud data centers. The proposed approach achieves the F1 measure score ≈1 on the MIT-BIH Arrhythmia database when applying Grid Search algorithm with the cross-validation method. This approach has also been implemented on a single-board computer and Google Colab-based hybrid Fog-Cloud infrastructure and embodied to a remote patient monitoring system that shows 25% improvement in the overall response time.

Keywords: Internet of Things, ECG analysis, 1D-CNN, fog computing, hybrid fog-cloud, heart disease.

I. INTRODUCTION

According to the World Health Organisation (WHO), cardiovascular diseases are the causes of an estimated 17.9 million deaths each year. There are different forms of cardiovascular diseases, including coronary heart disease and heart failure. Although some of them cannot be completely cured, they can be controlled by adequately monitoring the heart status and taking preventive measures accordingly. Several measures such as blood tests for troponin levels, chest strap, are utilised for perceiving the ECG signals at home and complement the realisation of remote cardiac patient monitoring system. However, to detect the cardiovascular diseases, the ECG signals collected from IoT-based systems should be analysed accurately.Recently, Artificial Intelligence (AI) based on Machine Learning (ML) and Deep Learning (DL) models have been widely adopted to perform disease analysis and classification of health care diseases. In such cases, the Cloud computing resources are predominantly used for training and assessing these models. However, the data centres of commercial Cloud service providers such as Google Cloud Platform and Amazon Web Services are located at a multi-hop distance from the IoT devices that significantly increases the communication delay while transferring the healthcare data. Conversely, the reaction time or latency tolerance for any severe cardiac condition is very stringent that urges for real-time processing of the ECG signals and faster initiation of emergency services. Hence, the Cloud-based execution of ML models is considered to be less feasible for ECG signal analysis.

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Deepfake Multimedia Data on Heterogeneous Filter Effects

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ABSTRACT: Due to the sheer widespread use of deep learning, media synthesis and manipulation has reached unparalleled degrees of realism. Deepfake has become the de-facto tool for manipulating the media. Although this technology has applications in the entertainment business, it is also vulnerable to political manipulation and other concerns. This technology has greatly advanced and promotes a wide range of applications in T.V channels, video game industries, and cinema, such as improving visual effects in movies, as well as a variety of criminal activities, such as misinformation generation by mimicking famous people. To identify and classify DeepFakes, research in DeepFake detection using deep neural networks (DNNs) has attracted increased interest. Basically, DeepFake is the regenerated media that is obtained by injecting or replacing some information within the DNN model.

KEYWORDS: Deep learning, DeepFake, CNNs, GANs, image classification, image forensics.

I. Introduction

Deep generative models (DGMs), particularly variational autoencoders [1] and Generative Adversarial Networks [2] have recently advanced to new degrees of realism in media synthesis and manipulation. Medical imaging, digital forensics, and art production have all been touched by DGMs. The emergence of 'deepfake,' an infamous technology that leverages DGMs to superimpose facial photos of a target person over those of a source person, has revealed the dark side of DGMs. The effectiveness of deep learning models can no longer be ignored; in fact, they are steadily replacing most technology and are being quickly adopted by numerous research communities and huge IT corporations. The recent growth of digital data throughout the Internet, as well as its relevance in everyday life, such as digital marketing, legal forensics imagery, medical imagery, sensitive satellite image processing, and many other applications, cannot be overlooked. Moreover, digital data in different applications are evolving in such a way that they are also fueling an uptick in cybercrime. In this context, the trend indicates serious vulnerabilities and a decrease in the trustworthiness of digital data. Furthermore, discerning whether the acquired digital data are authentic or altered and legitimizing digital documents are currently major problems.

Figure 1 . Deepfake creation with frame of Celebs from left to right which creates the target image

When early picture-based algorithms for deepfake image detection focused on prominent artefacts, it was discovered that, when compared to convolutional neural networks, these methods do not generalise as well to samples originated from unknown generators with latent artefacts (CNNs). The core component of CNNs, Adaptive Weighted Filters (AWFs), has demonstrated their superiority in the field of pattern recognition. In other words, the model is trained on DeepFake datasets and then put to the test in trials to assess how well it works. In this essay, we'll go over the various DeepFake detection approaches for images and videos. We'll also go over the DeepFake detection algorithms and datasets.Studies on DeepFake production and detection in images, sounds, and videos have recently been published. Deep learning and computer vision techniques, such as GANs [3] and autoencoders [4], have allowed for the creation of superrealistic false images and movies known as DeepFakes. DeepFakes (a mix of the phrases "deep learning" and "fakes") allow attackers or even non-technical machine learning users to alter a picture or video by swapping out the material and generating a new image or video that humans and computers cannot distinguish. People's faith in digital media content has been eroded as a result of the advent of DeepFakes, as they can no longer accept the visuals they are seeing.Research on identifying or detecting fraudulent modified media is considered standard research in the absence of deep learning. Currently, generative deep models are quite effective at building DeepFakes that are difficult to differentiate using traditional approaches.

II. Technical Background

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Network Detection for Cyber Security Measures using Deep Learning

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ABSTRACT:The widespread use of interconnectivity and interoperability of computing systems have become an indispensable necessity to enhance our daily activities. Simultaneously, it opens a path to exploitable vulnerabilities that go well beyond human control capability. The vulnerabilities deem cyber-security mechanisms essential to assume communication exchange. Secure communication requires security measures to combat the threats and needs advancements to security measures that counter evolving security threats. This paper proposes the use of deep learning architectures to develop an adaptive and resilient network intrusion detection system (IDS) to detect and classify network attacks. The emphasis is how deep learning or deep neural networks (DNNs) can facilitate flexible IDS with learning capability to detect recognized and new or zero-day network behavioral features, consequently ejecting the systems intruder and reducing the risk of compromise. To demonstrate the model's effectiveness, we used the UNSW-NB15 dataset, reflecting real modern network communication behavior with synthetically generated attack activities.

KEYWORDS: Deep learning,Intrusion Detection System, Cyber Security, Zero Day Attack.

I. INTRODUCTION

Advancesandwidespreaduseofinterconnectivityandinteroperabilityofinformationandcommunicationtechnologies (ICT) have become necessary to reshape our relations to daily activities. The vibe of reliance on ICT has enhanced individuals and organizations' posture allowing real-time global business continuity that continuously evolves to offer convenience-related interoperability frontier solutions [1].The exchange of digital informationacrossnetworkshasopenedapathtoexploitablevulnerabilitiesthatmayhavedetrimentaleffectsonbothindividualsandorganizations,thusdeeminganeffectivenetworksecuritysolutioncrucialtomaintainingconfidentiality,integrity,andavailability [2].Among the layered defensive mechanisms that address different attack vectors, network security controls are recognized as the first defense line. An intrusion detection system (IDS) scans network traffic to identify and report a violation basedon the preconfigured customized detection levels. Early detection will deter an intrusion and eject it from the system before any damage to the data. IDS assumes that intrusions behavioral features differ from legitimate users' behavior; therefore, IDS quantifies intrusion behavior in terms of its features. However, an exact distinction cannot be deciphered, creating an overlap between normal and abnormal behavior that can be more obvious by deploying an intelligent intrusion detection system[3].

The main types of intrusion detection systems include:

Anetworkintrusiondetectionsystem(NIDS)mayconsistofbothhardware(sensors)andsoftware(console)tocontrolandmonitornetworktraffic packets at multiple locations for a potential intrusion or anomaly.

Host intrusion detection system (HIDS) resides on a particular computer or server, identified as the host, and monitors activity only on that system. Although tapered to only one system, it offers higher capabilities than NIDS, as it can access encrypted information traversing the network, including system configuration databases, registries, and file attributes.

A Cloud intrusion detection system is a combination of cloud, network, and host layers. The cloud layer provides a secure authentication into the demand-based access to a shared group or application programming interface (API).Similarly, it will create abridge between existing ID Sandhypervisors.

To examine network traffic flow, IDSs deploy various detection techniques. Most common detection methods include:

- **Signature-based detection**, also known as knowledge-based, examines network traffic to identify patterns that match existing or known signatures. This detection method looks at existing attacks associated with a distinct signature, yet it requires continuous updates to account for unknown attack patterns.
- **Anomaly-based detection** ,also known as behavior-based detection, examines network traffic to identify patterns that deviate from normal or baseline behavior. This type of detection samples network traffic anddeploysstatisticalmethodstoscrutinizedeviations;onceathresholdisexceeded,itwillalerttheadministrator of an anomaly. Anomaly-based detection can detect new anomalies, but at the same time, require much more processing power to compare behavior patterns continuously, and even a minute change from baseline may trigger an alarm increasing false positives.

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Creation and Detection of DeepFake for Cyber Security Measures using Deep Learning

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ABSTRACT: The task of creating personalized photo realistic talking head models, i.e., systems that can synthesize plausible video-sequences of speech expressions and mimics of a particular individual is considered. The system presents creation of talking head models from a handful of photographs (so-called few shot learning) and with limited training time. The system can generate a reasonable result based on a single photograph (one shot learning), while adding a few more photographs increases the fidelity of personalization. The system is able to initialize the parameters of both the generator and the discriminator in a person-specific way, so that training can be based on just a few images and done quickly, despite the need to tune tens of millions of parameters. This project work shows that such an approach is able to learn highly realistic and personalized talking head models of new people and even portrait paintings. This paper proposes a hybrid face forensics framework based on a convolutional neural network combining the two face forensics approaches to enhance the manipulation detection performance. To validate the proposed framework, we used a public Face2Face dataset and a custom DeepFake dataset.

KEYWORDS: Convolutional neural networks, DeepFake, Face2Face, fake face detection, fake face image forensics, multi-channel constrained convolution.

I. INTRODUCTION

Deep learning (also known as deep structured learning) is a type of machine learning technology that uses artificial neural networks to learn representations. There are three types of learning: supervised, semi-supervised, and unsupervised. DeepFake is a recent example of a deep learning-powered application. DeepFake is a programme that generates and creates (fake) video material automatically. DeepFake technology is a contentious topic with several societal implications, including its election rigging and cyberbullying.

Convolutional Neural Networks (CNNs) may be trained to create very realistic human head pictures. These efforts need training on a big collection of photos of a single individual in order to construct a personalized talking head model. In many real settings, however, such customized talking head models must be trained from a few picture views of a person, if not only one.

With the advancement of computer vision and deep learning, there has been an increase in the number of realistic looking fake face media modified by AI, such as DeepFake or Face2Face that modify facial identities or emotions. Although the phony faces were largely made for amusement, their misuse has generated societal instability.

II. RELATED WORK

In [1] a huge body of works is devoted to statistical modelling of the appearance of human faces, with remarkably good results obtained both with classical techniques [2] and, more recently, with deep learning [3, 4] (to name just a few). While modelling faces is a highly related task to talking head modelling, the two tasks are not identical, as the latter also involves modelling non-face parts such as hair, neck, mouth cavity and often shoulders/upper garment. These non-face parts cannot be handled by some trivial extension of the face modelling methods since they are much less amenable for registration and often have higher variability and higher complexity than the face part. In principle, the results of face modelling [2] or lips modelling [5] can be stitched into an existing head video. Such design, however, does not allow full control over the head rotation in the resulting video and therefore does not result in a full-fledged talking head system. The design of our system borrows a lot from the recent progress in generative modelling of images. Thus, our architecture uses adversarial training [6] and, more specifically, the ideas behind conditional discriminators [7], including projection discriminators [8]. Our meta-learning stage uses the adaptive instance normalization mechanism [9], which was shown to be useful in large-scale conditional generation tasks [10, 11]. We also find an idea of content style decomposition [12] to be extremely useful for separating the texture from the head pose.

Facial images reveal facial expressions and identities, and its manipulation techniques can be divided into two types: facial expression manipulation and facial identity conversion. Facial expression manipulation studies started with lip motion synthesizing. The first lip motion synthesizing work is presented by [13] to automatically create a video of a person with generated mouth movements. [14] Uses high-quality 3D face capturing techniques to alter the mouth motions in a video so that it matches the new audio track of a dubber. [15] Demonstrated the first real-time expression

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Predicting Covid-19 pneumonia Severity on Chest x-ray with deep learning

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ABSTRACT: COVID-19 is a quickly spreading viral disease that taints people, yet creatures are likewise contaminated as a result of this infection. The everyday existence of people, their wellbeing and the economy of nation are impacted because of this destructive viral disease. Coronavirus is a typical spreading sickness, and till now not a solitary nation can set up an immunization for COVID-19. A clinical investigation of COVID-19 patients has shown that these kinds of patients are for the most part contaminated from a lung contamination subsequent to interacting with this illness. Chest x-ray (i.e., radiography) and chest CT are a more viable imaging strategy for diagnosing rush related issues. All things considered, a significant chest x-ray is a cheaper cycle in contrast with chest CT. Deep learning is the best procedure of AI, which gives valuable examination to concentrate on a lot of chest x-ray pictures that can basically influence on screening of Covid-19. In this work, we have taken the PA perspective on chest x-ray examines for Coronavirus impacted patients as well as sound patients. Subsequent to trying up the pictures and applying information expansion, we have utilized deep learning-based CNN models and analyzed their exhibition. We have thought about Inception V3, Xception, and ResNeXt models and inspected their exactness. To investigate the model presentation, 6432 chest x-ray checks tests have been gathered from the Kaggle repository, out of which 5467 were utilized for training and 965 for validation.

KEYWORDS: Artificial Intelligence; Covid-19; Convolution Neural Network (CNN); Machine Learning; X-rays.

I. Introduction

Machine learning is a subfield of artificial subfield(AI). The objective of AI by and large is to comprehend the construction of information and squeezed that information into models that can be perceived and used by individuals. In spite of the fact that AI is a field inside software engineering, it contrasts from customary computational methodologies. In customary processing, calculations are sets of unequally modified directions utilized by PCs to work out or issue tackle. AI calculations rather consider PCs to prepare on information data sources and utilize factual examination to yield esteems that fall inside a particular reach. Along these lines, AI works with PCs in building models from test information to mechanize dynamic cycles in view of information inputs.

Any innovation client today has profited from AI. Facial acknowledgment innovation permits virtual entertainment stages to help clients tag and offer photographs of companions. Optical person acknowledgment (OCR) innovation changes over pictures of text into portable kind. Self-driving vehicles that depend on AI to explore may before long be accessible to customers. AI is a consistently creating field. Along these lines, there are a few contemplations to remember as you work with AI strategies, or dissect the effect of AI processes.

The COVID-19 pandemic whereupon the world is growing right currently has been one of the cleverest hit obliterations and has been characterized as the worldwide wellbeing emergency within recent memory. Covid are a group of infections that cause sickness like respiratory illness of gastrointestinal sicknesses. The COVID-19 sickness is brought about by the infection called SARS-CoV-2 infection. The COVID-19 patient previously arisen in Wuhan in December 2019. India revealed its most case on January 30 2020 and presently has turned into a worldwide pandemic. This present circumstance ought to be dealt with carefully to avoidpotential risk before the exclude goes of control. Numerous researchers are taking significant endeavours to save humanity from this disaster.

II. Related work

In [1] author the identification of impact of covid-19 is due to lack of testing and medical care cannot be adequately delivered this can exhibit various patterns or pathological symptom in the lungs based on different causes this should be initiated at an early stage.covid-19 data set with the method of CNN in classifying normal and abnormal X-rays. The feature extracted improves the functionality of the classifiers where CNN has been trained with non-augmented data. Thecomputer aided system help the doctors for proper analysis of lungs and cascade uses the features extracted using Haar transform to get best accuracy in the classification process. In [2] COVID-19 are detected by real-time reverse transcriptase PCR (RT-PCR). The swab method achieved a diagnostic accuracy of 52%,due to contact with surface and gloves, this has caused danger to the medical sector.By using deep learning techniques.The (CNN)models combine with traditional Gray-level Cooccurrence Matrix (GLCM) and Local Binary Pattern (LBP) algorithms feature in a 1-D vector with each image.Deep learning techniques classify medical images with high diagnostic accuracy by extracting with the outbreak of COVID-19 and it will help physicians to improve accuracy of diagnosing COVID-19 through X

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Foreseen of Chronic Kidney Disease - A Machine Learning Perspective

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ABSTRACT: Chronic Kidney Disease is one of the most basic illness these days and appropriate analysis is expected quickly. AI procedure has become solid for clinical treatment. With the assistance of an AI classifier calculations, the specialist can identify the infection on time. For this viewpoint, Chronic Kidney Disease expectation has been examined in this article. Constant Kidney Disease dataset has been taken from the UCI storehouse. Seven classifier calculations have been applied in this exploration, for example, fake brain organization, C5.0, Chi-square Automatic connection identifier, strategic relapse, straight help vector machine with punishment L1 and with punishment L2 and irregular tree. The significant component determination procedure was likewise applied to the dataset. For every classifier, the outcomes have been figured in light of(i) full elements, (ii) connection-based highlight choice, (iii) Wrapper strategy highlight determination, (iv) Least outright shrinkage and determination administrator relapse, (v) engineered minority over-testing procedure with least outright shrinkage and determination administrator relapse chosen highlights, (vi) manufactured minority over-examining method with full elements. From the outcomes, it is denoted that LSVM with punishment L2 is giving the most noteworthy precision of 98.86% in manufactured minority over-testing method with full highlights. Alongside exactness, accuracy, review, F-measure, region under the bend and GINI coefficient have been processed and thought about consequences of different calculations have been displayed in the diagram. Least outright shrinkage and determination administrator relapse chosen highlights with manufactured minority over-inspecting strategy gave the best after engineered minority over-testing method with full elements. In the engineered minority over-examining method with least outright shrinkage and choice administrator chose highlights again direct help vector machine gave the most elevated exactness of 98.46%. Alongside AI models one profound brain network has been applied on the equivalent dataset and it has been noticed that profound brain network accomplished the most elevated exactness of 99.6%.

KEYWORDS: Chronic kidney disease, machine learning, prediction.

I. Introduction

Chronic kidney Disease (CKD) implies your kidneys are harmed and not separating your blood the manner in which it ought to. The essential job of kidneys is to channel additional water and waste from your blood to deliver pee and assuming the individual has experienced CKD, it implies that squanders are gathered in the body. This illness is persistent in light of the harm continuously over a significant stretch. It is complimenting a typical infection around the world [1]. Because of CKD might experience some wellbeing difficulties. There are many reasons for CKD like diabetes, hypertension, coronary illness. Alongside these basic illnesses, CKD additionally relies upon age and orientation. On the off chance that your kidney isn't working, then, at that point, you might see at least one side effects like stomach torment, back torment, looseness of the bowels, fever, nosebleeds, rash, heaving [2]. There are two principal infections of CKD are diabetes and hypertension. So that controlling of these two sicknesses is the avoidance of CKD. Typically, CKD offers no hint till kidney is harmed severely [3]. CKD is being expanded quickly according to the investigations hospitalization cases increment 6.23 percent each year however the worldwide death rate stays fixed. There are not many analytic tests to actually look at the state of CKD:estimatedglomerularfiltrationrate(eGFR), Urine test, Blood pressure. eGFR esteem shows that how your kidney cleaning the blood. Assuming your eGFR esteem is more noteworthy than 90, that implies the kidney is typical. Assuming eGFR esteem is under 60, that implies you have CKD. The specialist likewise requests pee test for kidney usefulness since kidneys make pee. Assuming the pee contains blood and protein, that implies your kidney isn't working as expected. Specialist estimates circulatory strain as Blood pressure range shows how your heart is siphoning blood. Assuming eGFR esteem comes to under 15, that implies the patient has end-stage kidney illness. As of now, there are just accessible medicines are dialysis and kidney relocate [4]. Patient's life after dialysis reliesupon such factors as age, orientation, recurrence and span of dialysis, actual development of the body and psychological wellness. In the event that dialysis is absurd, the specialist has just a single arrangement, that is kidney transplantation. Nonetheless, it is incredibly costly.

II. Related Work

In [5] author proposed information attestation and test diagnosis feasible in CKD conclusion. KNN is utilized for information assertion. Six classifiers' calculations utilized for precision of finding: strategic relapse, irregular woods

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Implementation of Machine Learning Model to Predict Heart Failure Disease

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ABSTRACT: In the current era, Heart Failure (HF) is one of the common diseases that can lead to dangerous situation. Every year almost 26 million of patients are affecting with this kind of disease. From the heart consultant and surgeon's point of view, it is complex to predict the heart failure on right time. Fortunately, classification and predicting models are there, which can aid the medical field and can illustrates how to use the medical data in an efficient way. This paper aims to improve the HF prediction accuracy using UCI heart disease dataset. For this, multiple machine learning approaches used to understand the data and predict the HF chances in a medical database. Furthermore, the results and comparative study showed that, the current work improved the previous accuracy score in predicting heart disease. The integration of the machine learning model presented in this study with medical information systems would be useful to predict the HF or any other disease using the live data collected from patients.

KEYWORDS: Decision Tree, Support Vector Machines (SVM), K – nearest neighbor classifier (K-NN), SVM with PCA, K-NN with PCA.

I. INTRODUCTION

The work proposed in this paper focus mainly on various data mining practices that are employed in heart disease prediction. The heart is one of the main organs of the human body. It pumps blood trough the blood vessels of the circulatory system. The circulatory system is extremely important because it transports blood, oxygen and other material to the different organs of the body. Heart plays the most crucial role in circulatory system. If the heart does not function properly then it will lead to serious health conditions including death. The main cause of heart stroke is due to blockage in arteries. It has many other names such as cardiovascular disease and arterial hypertension. Approximately, there are almost 26 million people around the world affecting with heart disease. The worry point is, this ratio is expected to increase rapidly in coming years, if precautions are not taken efficiently. Apart from making life style healthy and diet control, the right time diagnosing and comprehensive analysis are other essential factors, which can ultimately save the lives. Therefore, this paper has taken a small step towards saving the lives of HF patients and describes a way to improve the performance of

Diagnosing the patients on the bases of their medical history. Most of the time patients go for several tests, which can overburden them with extra physical activities, time, and for sure additional financial charges. As previous studies suggested the common reasons behind heart disease can be unhealthy food, tobacco, excessive sugar, and overweight or extra body fat, whereas the common symptoms can be pain in arms and chest. Noticeably, these reasons are independent from each other; proper analysis on this kind of dataset can improve the process of diagnosing and can assist the heart surgeons as well. Previously, different researches used number of techniques to improve the HF diagnosis process such as Extreme Learning Machine, heart disease classification, and machine learning classifiers. Therefore, this research attempts to improve the performance of the classifiers by doing experiments using multiple machine-learning models to make better use of the dataset collected from different medical databases.

Heart diseases or cardiovascular diseases (CVD) are a class of diseases that involve the heart and blood vessels. Cardiovascular disease includes coronary artery diseases (CAD) like angina and myocardial infarction (commonly known as a heart attack).There is another heart disease, called coronary heart disease (CHD), in which a waxy substance called plaque develops inside the coronary arteries. These are the arteries which supply oxygen-rich blood to heart muscle.

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"IOT enables elderly fall detection model using optimal deep convolutional neural network for Smart Homecare"

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ABSTRACT: Elderly falls could be highly dangerous especially when the fallen people lay unattended or unobserved for a long time. Depending on the impact of the fall, the casualties may also increase. Prolonged blood loss canalso lead to early death or major health problems. Thus it is necessary to take measures to help the victims, who unfortunately are mostly old or disabled. Even after showing good accuracy rates, wearable sensor based fall detection systems are not used by many potential users due to a variety of personal and physical reasons. Thus detection of falls using cameras is a very reliable solution to address this problem This paper proposes an efficient fall detection system based on camera vision using convolutional neural networks (CNN).Convolutional Neural Networks have proven to be an efficient means of classification in the fieldof image processing. Here we propose an efficient fall detection design using Inception model CNN.

KEYWORDS: Smart homecare, CNN algorithm, smartphone, fall detection, artificial intelligence, elderly people, deep learning.

INTRODUCTION

The world population is increasing tremendously. Now, as the population is increasing, the demand for earning livelihood is increasing and becoming more tough making younger generation leave their homes and settle in distant urban localities to earn and send money to their elderly parents. As a result of which, unlike older times, elderly people are gradually becoming lonely and staying solitude in their houses. As people get older, they get vulnerable to different medical and physiological problems. The problem increases when there is nobody to take care of them. This means that no one can help them if any accidents happened during this time. If the elderly fell down and injured, they need to call the ambulance or their relatives to seek help which may not be possible. Rural India still lacks a facility to hire a caregiver or a nurse, who would take care of the elderly people living alone. Hence, it is the left alone elderly population, who has to do the daily chores of life and also take care of own selves till they die.

There is a lack of studies about how "elderly people staying alone" cope with their deteriorating health in ruralIndia. Even though the medical resources and facilities are expanding daily, still the suffice level is not attained. Falls exponentially increase with age related biological changes, which is leading to a high incidence of falls and fall related injuries in the ageing societies. Falls are a major problem in the elderly because they may cause significant morbidity and mortality. This is due to the complications arising from fallscausing a significant decrease in functional status, serious injury, and an increase in the utilization of medical services. Elderly people's falling percentage is higher because their body become weaker and their physical strength also become lower. Once they fall down they may not be able to stand up themselves or become unconscious, they need helps from others. Usually, not many people think about elderly people falling until some dreadful events happens such as someone has injured badly or even death. Falling is an accident that threats the health, especially happened to older people. Caused by reducing levels ofstrength and stability of the body of a person

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DESIGN OF CAMOUFLAGE MILITARY ROBOT IMPLEMENTED WITH BORDER SECURITY USING AI AND ML

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ABSTRACT: Science is an area that is rapidly evolving, producing technology that can make human existence easier, ROBOT is one such invention in this field. Huge endeavors are being conducted in the defense field in this modern era to implement primitive and high security measures and protect border security forces from trespassers. In the defense field, several defense organizations use robotics, and the efficiency of robots is very high in several areas. In this project the robot is implemented with Camouflage technology, to get concealed from enemy's eyes and act as virtual spy, and Border security system, to keep our borders secure from intruders, and Landmine detection system, to detect Landmines to protect our soldiers as well as tankers from potential harms. Thus, the robot has potential to do its part in keeping the borders of the nation secured.

KEYWORDS: Defense field, Security, Camouflage technology, Border security system, Landmine detection system.

I. INTRODUCTION

India's land boundary stretches for 15,207 kilometres, with the coastal portion stretching for 7517 kilometres. The bordering districts are made up of ninety-two districts spread across seventeen states. Large swaths of India's political borders are disputed, either because they are poorly delineated or because they are not delineated by natural sfeatures.in this modern era, huge initiatives are taken in the defence field to deploy primitive and high security measures and safeguard the border security forces from the trespassers. Nowadays, many initiatives are taken in the field of defence in adopting primitive security measures to protect the border from the trespassers. Multiple armed forces patrol the regions of rugged topography and severe weather conditions throughout the year. Some even lose their lives due these severe conditions and wars. During war fields it's important to track down the enemies as well as able to conceal ourself from enemy force.in this project the robot is able camouflage itself, using this property the robot can be used as virtual spy. It is also implemented with border security system to safeguard the nation's border from intruders in any type of situations. It works by comparing the faces in the captured images to those already stored in the database. The soldiers along with their vehicles faces several challenges including dangers of landmines. Our robot is implemented with landmine detection system to protect itself, our soldiers as well as their vehicles from the potential danger of landmines. Therefore, the robot is capable of doing its part in the nation's security.

II. RELATED WORK

Facial recognition application for border control, Laura Rodrguez Carlos-Roca, Isabelle Hupont Torres, and Carles Fernández Tena. This paper gives an overview of border control procedures and discusses how the use of various biometric technology helps to enhance them. One of the newest biometric technologies to be included to this list is face recognition in particular [1]. Intelligent Border Security Intrusion Detection Using IoT and Embedded Systems by Dawoud ALshukri, VidhyaLavanya R, Sumesh E P, and Pooja Krishnan for the purpose of detecting various items and intruders, this system employs thermal imaging cameras (FLIR). An IP address is given to FLIR, and it is connected to the command centre via the local network. Video is recorded by software code, followed by intrusion detection. The site is illuminated under varied circumstances using a motor-controlled spotlight with an infrared and laser gun [2]. Smart Border Surveillance System Using Wireless Sensor Network and Computer Vision

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"Two Way Safety Enabled Intelligent Stove with Age Verification Using Machine Learning and Internet of Things"

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ABSTRACT: In these era of latest technology smart embedded system has become a core component, and IoT based smart embedded system is the trendiest field in the research region. In our research, we are proposing an IoT based smart stove with age verification. Any accident might occur at any time from a stove. So we are designing a two-way safety enabled stove with a child lock system and gas leakage detection feature. These will be done by using machine learning intelligent system which will try to ensure two way safety and will detect age from real-time video streaming and notifications. Our main focus is a child would not be able to turn the stove on. As well as, the stove can entitle safety via gas detection alarm. We are using a Raspberry Pi and Gas Detection Module with a buzzer for the hardware implementation. Also, we are applying a Machine Learning object detection algorithm (Haar Cascade) and a deep learning architecture (CNN) for the system execution. Since our stove is IoT-based, the stove is ensuring safety remotely as well as manually which will try to prevent accidental occurrences.

KEYWORDS: IoT, Embedded System, Smart Embedded System, Child Lock System, Age Detection, Raspberry Pi, Buzzer, Machine Learning

INTRODUCTION

Internet and embedded systems are one of the major growing fields that can change the way people live their daily lives. The objective of embedded devices is that they build a unique computing system. An embedded system generally runs as a single operation. However, these embedded devices that are connected to the internet can communicate through other network devices. Moreover, these devices provide flexibility and facilities to improve the domestic environment. People have the control to operate and monitor the devices remotely through the IoT (Internet of Things) features.

In this research, we are presenting a smart embedded device that is an IoT based smart stove. The stove will provide us twoway protection: Real-time age detection for child lock and safety from accidental gas leakage. We are doing this research in the perception of Bangladesh. The stove will be both manual and electric. In our work, we are introducing an IoT based smart system that will be representing the concept of our smart stove. For the system, we are using Raspberry pi which is a microcomputer. Other necessary sensors, modules, and apparatus are interfaced with the raspberry pi. The Raspberry Pi is a credit-card sized, low-cost computer that connects to a PC screen or TV, and utilization a common console and mouse. It is a capable little device that permits people of all ages to explore. It is capable of doing everything an individual would expect a personal computer to try to, from browsing the web and playing high-definition video, to creating spreadsheets, word-processing, and playing games. Moreover, the Raspberry Pi has been utilized in a good array of digital maker projects, from parent detectors to weather stations and music machines.

I. RELATED WORK

A. Age Detection:

For age detection several articles and journals have been published over years. Untung et al. [1] states that the availability of computer systems has created a variety of automated applications in personal identification. From the different attributes of biometrics, face recognition procedures predominantly face verification has become a region of research. Marques, I. et al. [2] have informed, researchers became interested in face recognition techniques in the 1960s, it was started by Woodrow W. Bledsoe cooperate with the U.S. Department of Defence and Intelligence Agency. Bledsoe designed and implement a semi-automated system, some facial coordinates are calculated manually by a human and then a computer calculates the information for face recognition.

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Deep Learning Approach for Plant Disease Detection

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ABSTRACT: Because plant diseases have an impact on the spread of their species, early detection is critical. However, before the emergence of the Machine Learning set, i.e., Deep Learning, this study domain has a lot of potential in terms of better precision, and numerous types of Deep learning equipment have been utilised for plant disease identification and classification. Several sophisticated / modified Deep Learning structures are employed in conjunction with a variety of visual approaches to detect and distinguish the symptoms of plant illnesses. In addition, several operational metrics are used in the testing of those structures / methods. This article gives a comprehensive overview of the Deep Learning models used to visualise three plant diseases. Furthermore, several research gaps have been identified that are more specific in identifying plant diseases even before symptoms appear.

KEYWORDS: Plant diseases, Deep Learning, MachineLearning.

I. INTRODUCTION

In today's world, farming is more than just a source of food. Agriculture production is extremely important t India's economy. The diagnosis of plant diseases is crucial in the agricultural area. The adoption of automatic illnes detection systems is beneficial in this part at the very beginning. Small leaf disease, for example, is a dangerou disease that affects pine trees in the United States. The damaged tree's regeneration is hampered, and it dies within years. It can be found in Alabama, Georgia, and other parts of the South. In both circumstances, early detection could have been beneficial. The present technique to plant disease detection involves agriculture specialists performing a naked eye inspection while identifying and analyzing the disease. To accomplish so, a large team of professionals is required, as well as ongoing plant inspection, which is quite costly when working with huge areas Similarly, in certain countries, appropriate infrastructure, as well as any sense of being able to approach experts, are severely lacking. As a result, the cost of consulting professionals is both substantial and time-consuming. In such cases, the suggested approach looks to be useful for monitoring big crop fields. By truly seeing, machine vision, which is reliant on picture supply for automatic robot process guidance, control, and inspection, is made easier. Plan disease identification by visual inspection is a time-consuming and ineffective method that might be used in sma fields. The automatic detection approach, on the other hand, is employed since it requires less effort, time, and i required to be effective Colors such as yellow and brown lines, early and late scorch, and others are common plan diseases caused by microbial, viral, and bacterial agents. Photos are analyzed to determine the extent of the infected sickness and the color variance of the decamped area.

In evolutionary algorithms, genetic algorithms are employed. Population is an algorithm for generating solutions to optimization problems from a set of solutions. One population's solutions have been picked. This will come to close with the Lope that, in comparison to the current population, the current population will be stronger. Based o there fitness, solutions selected to produce new offspring are selected the more relevant they are,

- The genetic algorithm reliably, constantly, or discretely optimizes both variables.
- Scans from a big sampling sample's cost region
- A big number of statistics will be stored around the same time on the same day.
- It can optimize cost factors around exceedingly complicated surfaces.
- Specifies a group of appropriate cures rather than a single one. There is a solution. As a result, different feature extraction results will be obtained at about the same time.

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Secured node detection technique for wireless sensor networks based on Deep Learning

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ABSTRACT

The wireless sensor network is becoming the most popular network in the last recent years as it can measure the environmental conditions and send them to process purposes. Many vital challenges face the deployment of WSNs such as energy consumption and security issues. Various attacks couldbe subjects against WSNs and cause damage either in the stability of communication or in the destruction of the sensitive data. Thus, the demands of intrusion detection-based energy-efficient techniques rise dramatically as the network deployment becomes vast and complicated. Qualnet simulation is used to measure the performance of the networks. This paper aims to optimize the energy-based intrusion detection technique using the artificial neural network by using MATLAB Simulink. The results show howthe optimized method based on the biological nervous systems improves intrusion detection in WSN. In addition to that, the unsecured nodes are affected the network performance negatively and trouble its behavior. The regress analysis for both methods detects the variations when all nodes are secured and when some are unsecured. Thus, Node detection based on packet delivery ratio and energy consumption could efficiently be implemented in an artificial neural network.

INTRODUCTION

Advances in electronics and wireless communication technologies have enabled the development of large-scale wireless sensor networks (WSNs) that consist of distributed, autonomous, low-power, low-cost, small-size sensor nodes to collect information and cooperatively transmit data through infrastructure-less wireless networks as shown in Figure. Security applications such as intrusion prevention or detection in such resource-constrained reveal significant challenges and the main focus of this paper. WSN is becoming increasingly popular as it enables sensor nodes to measure the surrounding environment, communicate and process measured data. WSN has been directed from military applications to various civil applications, especially in hostile areas. Medical, industrial and smart energy applications are still in need of extensive research due to different challenges encountered. Energy consumption is one ofthe vital challenges that face WSNs' research. Nodes are supplied with batteries that cannot be recharged or replaced in the field of operation. Management of WSN's energy helps to increase the network lifetime. Nowadays, WSN has numerous applications in military, health and environmental areas due to ease of use and having the ability to withstand harsh environmental conditions. These networks are self-administered networks in which nodes are self-organized to have reliable communication between them. To have secure communication among various self-organized nodes, security issues are of main concern. There are various types of attacks that vulnerable to WSN and eliminate the communicationbetween the nodes. So, many studies focus on detecting the intrusion in WSN by different algorithmsand approaches.

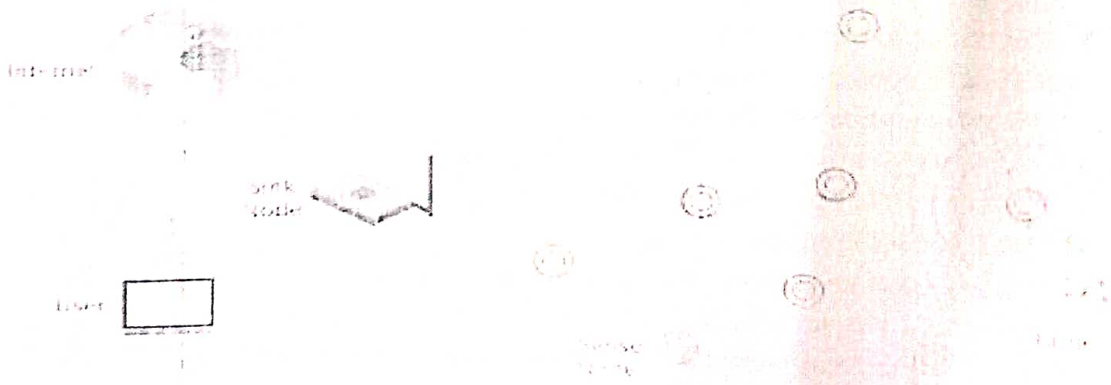

Figure 1. WSN structure

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AN AUTOMATED RADIO CONTROLLED VEHICULAR MOVEMENT SYSTEM THROUGH HAND GESTURE

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ABSTRACT The integration of more and more functionality into the human machine interface (HMI) of vehicles increases the complexity of device handling. Robots are currently playing a big role in our lives. There is different type of robots: wheeled robots, flying robots, factory building robots. The current way to control these robots is by using a keyboard, joystick or pre-programmed commands. This project is about to introduce a new way to control a robot and it is by using gestures. This project is to build a hand control robot (car), which is controlled from a distance using only gestures. The project has two components a car and a control station. The control station is computer which has gesture recognition hardware so that it can detect the commands and send them to the car. The control station is the microcomputer Arduino UNO. The data from the hand movements with the help of the accelerometer are fed into the Encoder HT 12E through the Arduino UNO. Then the values are transmitted with the help of TX 434. Rx 434 receives the values in the receiver part, where it is decoded by a Decoder HT 12D and sent to the motor driver L293D. Thus motors are controlled with the data obtained from the motor driver.

I. INTRODUCTION

Many parameters of robot are designed according to requirement. There are different ways to control robotic arm like Voice Controlled, Keypad Control, Gesture Control, etc. Implemented system consists of transmitter & receiver. Transmitter is nothing but human hand with flex sensors & receiver is robot manipulator. Motion of transmitter is wirelessly transmitted to receiver through RF module. Robotic arm which is receiver is nothing but a mechanical system formed by different joints and end and effectors i.e. gripper movements of these fingers or gripper can be carried out using stepper motor or servo motor when user carry out motion of hand for any application at transmitter side same movement is copied by receiver as on transmitter there are flex sensors mounted on glove a transmitter which change its resistance depending on movement of user. In the research group of intelligent robot, one of the biggest issues is autonomous-driving of robot. Gesture means the movement of hand and face of humans. The main objective of this project is to control the car using human hand gestures. The human hand gestures are sensed with the help of an accelerometer. It is coded in such a way that the required actions for the human gesture are done. These sensed signals are processed and then transmitted to the robotic arm at the receiver section using RF transceiver module. Thus, the car performs the required movement. This system is also uses an RF transceiver module for the wireless communication. The model can be constructed and the required work can be done. Thus, this proposed model will be helpful and avoid danger for the people working in hazardous areas. Robots are increasing being installed and used into industries to replace humans especially, to perform dangerous and hazardous tasks. A hand gestured control car is a kind of robot which is capable of carrying complex actions automatically or under human supervision. These can be used in various fields such as industries, research, military and healthcare. It might be dangerous for human to carry out tasks, like working with concentrated hazardous chemicals, treating patients with fata

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Artificial Intelligence and Internet of Things Enabled Disease Diagnosis Model for Smart Healthcare Systems

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ABSTRACT:The Internet of Things (IoT), cloud computing, and Artificial Intelligence (AI) have all recently advanced, transforming the traditional healthcare system into smart healthcare. Medical services can be improved by using essential technologies such as IoT and AI. In the healthcare sector, the confluence of IoT and AI offers a variety of options. IoT devices, such as wearables and sensors, allow for seamless data collection, and AI approaches use the information to diagnose diseases.For disease diagnosis, the suggested method employs a Crow Search Optimization algorithm-based Cascaded Long Short-Term Memory (CSO-CLSTM) model. CSO is used to tweak both the 'weights' and 'bias' parameters of the CLSTM model in order to get improved classification of medical data. In addition, the Isolation Forest (iForest) technique is used in this study to eliminate outliers. The application of CSO improves the diagnostic outcomes of the CLSTM model significantly.

KEYWORDS: Internet of Things, convergence, cloud computing, artificial intelligence, smart healthcare, disease diagnosis.

I. Introduction

In recent years, the healthcare industry has begun to use information technology to produce new apps and improve diagnosis and treatment processes. The main entities that generate massive amounts of digital data are advanced technology and scientific theory. Advanced clinical applications, which have just recently been developed, are the brainchildren of information technology.A new AI and IoT convergence-based illness diagnosis model for smart healthcare systems is presented in the current research. The goal is to create a disease diagnosis model for diabetes and heart disease using AI and IoT convergence techniques. Data collecting, pre-processing, classification, and parameter tweaking are all stages of the described model. Data is collected via IoT devices like wearables and sensors, and then processed using AI algorithms to diagnose the ailment. For disease detection, the suggested AI and IoT convergence method employs a Crow search Optimization algorithm-based Cascaded Long Short-Term Memory (CSO-CLSTM) model.The CLSTM model's 'weights' and 'bias' parameters are tuned using CSO. CSO is used because it improves the diagnostic outcome of the CLSTM technique. The CSO-LSTM model's efficacy was confirmed using healthcare data.

II. Related Work

Several studies have previously been carried out in order to establish a system that detects physiological variables and health indicators in order to identify severe instances and accidents. Mustlag et al. [1] used a Wireless Body Sensor Network (WBSN) to monitor users' heart rates and mobility whenever they needed it, even from far away. When critical changes occur in this study, the edge node is connected to the internet and sends an alert (by cell phone) to family members (early prediction of falls, tachycardia, or bradycardia). Villarrubia et al., et al., et al., et al., et al., e[2 proposed a system for monitoring patients and their heart rates from home by computing basic electrocardiogram (ECG) information. An emotion-aware linked healthcare model was constructed employing an efficient emotion detection module in the literature [3]. This study used a variety of IoT devices to gather a patient's speech and visual signals in smart homes. Kaur and Jasuja [4] looked at how the Bluemix cloud technique may be used to record physiological data and allow physicians to view it remotely. The results of the simulation are viewed and analysed in the IBM Watson IoT environment. In the cases of Alwan and Rao,[5], a case study was undertaken for fever analysis utilising an integrated system that monitors patients' health data on a regular basis. Satija et al. [6] proposed a real-time IoT-based ECG telemetry. Researchers have displayed the efficiency of a model based on several activities in this work. The use of domain sensors to acquire contextual data and perform multimodal processes is reduced with static monitoring. Pham et al. [7] then provided a concept in which ecological sensors, optitrack cameras, and smartwatch based sensors are used to gather video, picture, and audio signals with specific wearables for physiological data collecting. A novel smart healthcare model was proposed in the literature [8], which included a pathology diagnosis technique based on deep learning.Pathogens can be discovered using a patient's electroencephalogram readings. A smart EEG headset gathers EEG signals and sends them to a mobile edge computing server in this concept. The signals are pre-processed by the server before being sent to the cloud server.

Implementation of Machine Learning Model to Predict Heart Failure Disease

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ABSTRACT: In the current era, Heart Failure (HF) is one of the common diseases that can lead to dangerous situation. Every year almost 26 million of patients are affecting with this kind of disease. From the heart consultant and surgeon's point of view, it is complex to predict the heart failure on right time. Fortunately, classification and predicting models are there, which can aid the medical field and can illustrates how to use the medical data in an efficient way. This paper aims to improve the HF prediction accuracy using UCI heart disease dataset. For this, multiple machine learning approaches used to understand the data and predict the HF chances in a medical database. Furthermore, the results and comparative study showed that, the current work improved the previous accuracy score in predicting heart disease. The integration of the machine learning model presented in this study with medical information systems would be useful to predict the HF or any other disease using the live data collected from patients.

KEYWORDS: Decision Tree, Support Vector Machines (SVM), K -- nearest neighbor classifier (K-NN), SVM with PCA, K-NN

I. INTRODUCTION

The work proposed in this paper focus mainly on various data mining practices that are employed in heart disease prediction. The heart is one of the main organs of the human body. It pumps blood trough the blood vessels of the circulatory system. The circulatory system is extremely important because it transports blood, oxygen and other material to the different organs of the body. Heart plays the most crucial role in circulatory system. If the heart does not function properly, the [illegible] causing death. The main cause of heart stroke is due to blockage in arteries. It has many other names such as cardiovascular disease and arterial hypertension. Approximately, there are almost 26 million people around the world affecting with heart disease. The worry point is, this ratio is expected to increase rapidly in coming years, if precautions are not taken efficiently. Apart from making life style healthy and diet control, the right time diagnosing and comprehensive analysis are other essential factors, which can ultimately save the lives. Therefore, this paper has taken a small step towards saving the lives of HF patients and describes a way to improve the performance of

Diagnosing the patients on the bases of their medical history. Most of the time patients go for several tests, which can [illegible] and for stare additional financial charges. As previous studies suggested the common reasons behind heart disease can be unhealthy food, tobacco, excessive sagar, and overweight or extra body fat, whereas the common symptoms can be pain in arms and chest. Noticeably, these reasons are independent from each other; proper analysis on this kind of dataset can improve the process of diagnosing and can assist the heart surgeons as well. Previously, different researches used number of techniques to improve the HF diagnosis process such as Extreme Learning Machine, heart disease classification, and machine learning classifiers. Therefore, this research attempts to improve the performance of the classifiers by doing experiments using multiple machine-learning models to make better use of the dataset collected from different medical databases.

Heart diseases or cardiovascular diseases (CVD) are a class of diseases that involve the heart and blood vessels. Cardiovascular disease [illegible] coronary artery diseases (CAD) like angina and myocardial infarction (commonly known as a heart attack). There is another heart disease, called coronary heart disease (CHD), in which a waxy substance called plaque develops inside the coronary arteries. These are the arteries which supply oxygen-rich blood to heart muscle.

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Use of Artificial Intelligence in Agriculture

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ABSTRACT: We all know that in this modern era, technology plays a very important role in every task. In every field technology is used to enhance work efficiency, for less time consumption and for perfect and better results. Food shelter, and cloth are three essential things for human beings. Increasing population ultimately leads to increased farming results. At today's date farming techniques are enhanced using technology such as artificial intelligence which results in enhanced quality of yield. This paper throws the vision on how the use of technology can be fueled the result of different sectors of agriculture.

KEYWORDS: Artificial Intelligence, Blue River Technology, Sky squirrel technology, Farming, GIS(Graphic information system),GPS(Global positioning system),yield monitoring ,Remote sensing ,WSN(wireless sensor Network),MLP(Multilayer perception), MLP algorithm.

I. INTRODUCTION

Now everything has become faster and easier because of technology. In the 19th century when the industrial revolution took place machines were deployed as substitutions for humans. It reduces human labor as well as gives more perfection in the work. In the present day, it is the reality that artificial intelligence is empowering human labor. In agriculture there is a quick adaptation of Artificial Intelligence in its various techniques. Attending more efficient farming practices using technological advancements and solutions is the need of the current situation. Use of technologies like artificial Intelligence will help farmers to do more with less, by enhancing the quality of crops. Until the industrial revolution man power was one of the main factors of farming. In the present day different techniques are used like disease detection, identifying the readiness of crop, depending upon soil which fertilizer should use, field management and many more. Factors such as climate change, population growth and food security concerns in the industry and this leads to the development of more innovative approaches to protect and improve crop yield. This results in the use of the farming industry. At present in India Microsoft Corporation is working in Andhra Pradesh with 175 farmers rendering different services. Now the question arises: what is Artificial Intelligence? Artificial Intelligence refers to simulation of human intelligence in the machines that are programmed to think like humans and mimic their actions.

II. EXISTING SYSTEM

Farming or agriculture is the biggest industry in our country and plays a key role in social and economic growth of the country. Before adapting a technology in agriculture, farming is done using traditional techniques and methods. Farming depends on many factors or we can say many factors affect farming. In India we found different environments, different weather, different soils which are suitable for different crops at different places. Farmers use to harvest a particular type of crop or the cycle of crops. In India, in most of the regions farming depends upon rain or water availability. The eight major steps farmers perform are crop selection, land preparation, seed selection, seed sowing, irrigation, crop growth, fertilizing and harvesting. And all these steps are performed manually only which require more human and animal labor.

III. LITERATURE REVIEW

Sr. No.	Author	Research Paper	Advantage	Disadvantage
1.	Verónica Saiz-Rubio	Smart Farming towards Agriculture - 2020	Current status of advanced farm management systems with the end goal that producers can make streamlined choices to save money while securing nature.	A few studies report that horticultural robots incorporating types of AI can carry out specific responsibilities quicker than people. In spite of there are different examinations that negate this announcement, mechanical

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Web Based Crime Reporting and Management System

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ABSTRACT: The "Crime Reporting and Management System" is a web-based website for online complaining and computerized management of crime records. "Digitalization of the manual way of maintaining crime complaints" is the main aim of this project. In today's generation, the number of people using online systems is increasing rapidly and hence; online facilities can be used efficiently for personal security or various other protection purposes. The crimes happening around awakened us to go for the safety issues, so new websites have been developed to provide security systems online that can be operated easily. This project presents City Without Crime (CWC), a web-based application for managing crime in the city. This software provides a facility for reporting crimes online, registering complaints, viewing updates on case and maintaining records.s The age-old way of maintaining hard copies of the complaint filed by the victims, kind off proved to be inconvenient in maintaining the records, searching for complaints, complaint history management and viewing the updated case. The solution for the previously mentioned problem can be digitalization of the crime reporting system and this can be achieved by employing the concepts of HTML, CSS and JAVASCRIPT as front end of the portal, the back end is put into action using PHP, the main general-purpose scripting language and the storing of data is achieved through MySQL which is an open-source relational database management system. A XAMPP Server must be maintained for the temporary storage of the database to enable the processing facilities.

KEYWORDS: Crime Reporting and Management System; Database; HTML; CSS; JavaScript; PHP; MySQL.

I. Introduction

The Crime Reporting System in PHP is a simple mini project with the purpose of reporting complaints of any crime. The project contains only the users' side. The user can either be police officials or victims/complainers. The purpose of reporting complaints is to get help for solving the situation or crime registered and this project makes the process of handling reports, filing complaints and viewing updates feasible. The users as complainers can simply register the complaint with all the details required and submit it. While the police officers can log in and manage the complaints of all users. The officers can be head, in-charge, or normal police. This is a very simple project that makes a convenient way for the victims to register complaints swift and easy. The need to go visit a police station every time for enquiring the updates of their case is cut short. This Crime Reporting and Management System is built on core front end tools i.e HTML, CSS, JavaScript and supported by PHP at the back end with the database handled through MySQL. Talking about the features of this system, it just contains the user(victims/officials) section. The user(victims) can submit their complaints, while the officers can manage the complaints of all users who have submitted the complaints. The design of this project is pretty simple and user-friendly making it easy to access without any difficulties.

II. Existing system

Almost all operations are done manually in the existing crime management system, such as filing complaints, taking actions against crimes, viewing status, etc. So, with the existing system, if someone needs to register a complaint, he must do it through the police. If it is done manually, numerous minor errors will occur. Error detection in the previous entries and data cross verification is another essential operation. These are done manually, and it would take time Drawbacks of the existing system can be concluded as follows:

1. The existing system is time-consuming and not very user friendly.
2. Even a sincere and experienced officer cannot lead more than one case at a time.
3. In many cases, due to bribery, the innocents are accused in the existing system since the records are manually kept which is easy to manipulate.
4. Moreover, the records are not centralised. Hence changes made might not reflect everywhere.

III. Proposed system

Now the proposed system is developed to solve all the problems that occurred in the earlier systems by automating most of the operations. Keeping in mind that the type of users can range from someone who knows how to work with computer to someone who knows nothing about them, this application can be used by all by providing a user-friendly interface. In today's world, where all people lack is time, this application lessens time consumption. It also provides better communication and faster updation of data. This system simplifies the overall procedure that goes through manual process by reducing the time consumption and cut short the documentation. The process of making records is simplified and the risk of manual error is reduced to great extent.

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Solar Powered Multifunctional Robot for Smart Agriculture Controlled Using Android

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ABSTRACT: In India over 70 percent of the rural households depend on agriculture .Multiple operations are performed in the agriculture field such as seed sowing, ploughing water spraying etc. The present method to perform such operation are difficult. The tools or equipments used for above operation are either expansive or difficult to use So the agriculture system in India must be encouraged by a system which will reduces the farmer work and time. This work aims to develop a robot which can perform multiple operation such as seed sowing , water spraying, mud levelling along with obstacle detection. The designed robot is powered using solar energy and its movements as well as mechanisms are using Bluetooth/Android application. The qualitative development of this paper is request for a system which minimizes the working cost and reduces the time

KEYWORDS: Agriculture , water spraying, obstacle detection, robot, seed sowing, solar powered.

I. Introduction

In Ind a agriculture is an essential occupation and its history dates back thousands of years Technology is developing with generations and the villages are being transformed to city regions and in turn farmer's population is getting reduced and also the number of labours who used to assist the farmers in farming are decreased and so in this example there is necessity for brand new generation to play a important position in making the farming a better and less complicated profession. Robotic technology is one such which can be used in extraordinary operations of agriculture like seed sowing, mud levelling and other obligations as nicely and decreases the necessity of human labour. Based on robotic assistance, this prototype represents a progressive system for improving agricultural procedures such as seed sowing, mud levelling, and water spraying. Some of the most pressing issues in Indian agriculture are rising input costs a lack of skilled labour, a scarcity of water resources, and crop monitoring. Agricultural robot technologies were used in farming to overcome these issues. This agriculture robot serves multiple functions. A single robot can perform multiple functions. This robot is designed to concentrate efficiently while also performing functions autonomously.

II. Related work

In [1] Ranjith, NikithaMN, ArunaK, Afreen, BT Venkateshmurti, proposed a work that aims to design and develop a solar-powered agro robot with a Bluetooth/Android app that can sow seeds, cut grass, and spray pesticides. In [2] Gokul, R.Diksith, M. Gopinath, S. AjithSundaresh, This proposed paper aims to improve the yield of rural product while reducing the cost and time of operation. Because each technique must be computerised, the robotics field is rapidly developing in developing countries, and this proposed machine could be one of the green systems in agriculture. In [3] M.D. I. Sujon, R. Nasir and Jayasree Baidya, Agricultural researchers studied the effects of various seeding techniques and machines, as well as different rates of oil seed rape application, on seed emergence plant establishment and grain yield. In order to change its position, the robot will farm using an analogy of ultrasonic detection. The main disadvantage of this system is that it does not work well in all soil types. In [4] S. Kareemulla, K Shaik, E Prajwal, B Mahesh, V Reddy, Farmers benefit from the system in the basic operation of seed sowing. The operating mode of this machine is straightforward. It is possible to effectively increase the total yield percentage.The labour shortage is manageable. When compared to manual and tractor-based sowing methods, this robot machine requires less time and energy. There is also less seed waste. The model's disadvantage is that it only has one mechanism. In [5] ,K DurgaSowjanya,R Sindhu, MParijatham,KSrikant, P. Bhargav, the Multipurpose autonomous agricultural robotic, which was carried out and tested efficiently for various capabilities such as ploughing, seeding, levelling, and water spraying. It was created by combining an agricultural robot with C programming. For unique motors, various parameters such as soil condition, area included by the robotic, and weight of the fabric for levelling, are examined. The advantages of multipurpose agricultural robots include reduced human intervention, proper irrigation, and efficient asset utilisation. These robots are especially useful in computerised weed control, fertiliser utilisation based entirely on soil condition, and soil sensors for drip irrigation in rain feed areas.

The preceding research papers aided in understanding the various aspects raised by the agricultural robot research. The robots designed in the preceding literature surveys have numerous issues with movement and grass cutting. This work effectively addresses these issues. Unlike previous robot designs, the designed robot incorporates three mechanisms. This work also sheds light on the future capabilities of robots.

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Study of Wearable IoT Devices Based on Smart Security Gadget and GSM for Women Safety

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ABSTRACT: Thousands of people (mainly women) are daily mistreated, battered and abused by their ex-couples or their current couples. In this sense, electronic surveillance can be an efficient tool for helping to guarantee the safety of victims. Ambient Intelligence (Aml), based on ubiquitous computing, represents a promising approach to make technology adapt to people in order to solve the challenge of developing strategies that allow the early detection and prevention of problems in safety environments and, more specifically, the protection of people under risk situations including cases of mistreatment or loss. This paper describes Guardian, an integral solution designed for improving the protection of mistreated and at-risk people by means of the integration of GPS, GPRS and ZigBee technologies. The basic architecture of the system, the proposed wireless devices, as well as the communication protocol used between the system and the devices are described. Furthermore, a first hardware and software prototype is depicted and tested.

KEYWORDS: WOMEN SAFETY, LCD - 16 x 2, Arduino ESP32, GSM / GPS Module, 7812/ 7805 voltage regulators for power supply, Alarm.

I. Introduction

This application uses GPS for distinctive the situation of the person in hassle and also the system are often divided into 2 modules initial module are often the pressure sensing element i.e. the basis device that activate the raspberry pi camera once sensing element is ironed. Second module are often the mobile app that send sms of close to location police headquarters and registered contacts either police or friends or members of the family that receive the message containing URL of location of victim. The foremost intention of our paper is to protect the protection of working women and school children, and we are creating a prototype to serve our purpose. These embedded devices have a warning emergency push-button and an electronic camera to acquire this example image. The GSM device monitors the victim's current location and sends a recorded contact warning message. Images are taken by the embedded camera and sent with a warning note. Our system consists of a school bus surveillance system for children's travel. With the assistance of sensors, over-speed tracking is also carried out. If the speed of the vehicle goes above the defined speed value, the warning message is transmitted from the system to the mobile device of the driver. For school children, this guarantees safe transportation. The way toward building up an unpredictable item that firmly couples equipment gadgets with significant level programming administrations requires an extra degree of arranging. For this task, we will practice a legitimate item improvement way to deal with the assistance you get acquainted with the way toward making true equipment ventures. This technique would then be able to be utilized to design your tasks and take them to the following level. The accompanying graph depicts a regular model advancement process, which consistently starts by characterizing the significant objectives that you need to accomplish with your item. This process includes paper goals, requirements, and development stages, integrate, test, and troubleshoot.

II. Related Work

Year: 2021
Title: IoT based Unified approach for Women safety alert using GSM
Author: K. Venkatesh, S. Parthiban, P. Santhosh Kumar.
The author mentions Right Now of Items (IoT), wearable gadgets where sensors collect data from the environment are packed with mounted gadgets. At that point, the data is packaged and handed-off to remote areas for inquiry. These early developments, though looking harmless, pose security and safety issues. The topic of the potential and effects trading such gadgets arises.
Year: 2020
Title: IoT Based Smart Security and Safety System for Women and Children
Author: K. Srinivasan, T. Navaneetha, R. Nivetha, Shaista Khanam, Trupti Shah
[1] proposed algorithm for women safety using fingerprint module. This paper gives a detailed approach towards women safety. Here fingerprint is required for activation of device, electric shock producing circuit, GSM and GPS module for alerting and location tracking. At the time of emergency, it is hard to place the finger in the fingerprint module and recognition is not possible, if there is any undesired stuff (wet or dust) in the finger.

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PARKINSON'S DISEASE PREDICTION AND ANALYSIS USING MACHINE LEARNING

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ABSTRACT: Machine Learning techniques and algorithms play a significant role in pattern in a recognition in biomedical sciences. These techniques have been assisting researchers in classification of medical images and prediction of models to have a comprehensive understanding of complex medical problems. Machine learning is the sub field of machine learning algorithms which deals with the structure and the function of the brain. In this project, XG Boost algorithm has been applied for the classification of patient's to discriminate or identify Parkinson's Disease (PD) affected people from normal healthy people. It is challenging to classify complex clinical data to detect diseases like PD or to estimate the stage of the disease. XG boost is a machine learning algorithm which learns from rich data sources such as MRI, fMRI and etc, all the collected data likewise and develops predictive models for accurate data classification. Using XG boost, we successfully classified data of PD patients from normal controls and attained an accuracy of 97.63%. This endeavor suggests that XG Boost algorithm has the potential to extract the most discriminative features of these complex clinical data and hence the same architecture has the capacity to be effectively used in our research to perform other medical data classification or more complicated systems. .

KEYWORDS: Parkinson's disease (PD), Machine Learning(ML), PD datasets, XGBoost Algorithm.

I. INTRODUCTION

Parkinson's disease (PD) is a neurodegenerative disease first described by James Parkinson. It is one of the common causes of neurological illness among older adults affecting about 1% of the population over 60 years old. PD is mainly characterized by motor disorder (and other neuropsychiatric symptoms) and impairment in cognitive function and is diagnosed by symptoms such as slowed movements, muscle rigidity, and tremor (at rest) expressionless face, quiet speech, cramped handwriting, shuffling gait, trouble getting out of a chair, and difficulty swallowing.

The loss of dopamine's result in the symptoms like anxiety, depression, weight loss and visual problems. The other symptoms that can be seen in the people with Parkinson's disease are poor balance, voice impairment and tremor. Various research studies have shown that 90% of people who suffer from PD have speech and vocal problems which include dysphonia, monotone and hypophonia. Recent clinical, pathological and community-based studies suggest that cognitive decline is marked by a frontal-subcortical impairment progressing to dementia when posterior and cortical deficits are present during middle to late stages of PD.

The cause and cure of PD are yet unknown but the availability of various drug therapies offers the significant mitigation of symptoms especially at its earlier stages, thus improving the life quality of patients and also reduces the estimated cost of the Pathology. The analysis of voice measurement is simple and non-invasive. Thus, to track the progression of PD the measurement of voice can be used. For assessing the progression of PD, various vocal tests have been devised which include sustained phonations and running speech texts. The tele-monitoring and tele-diagnosis systems have been widely used as these systems are based on speech signals which are economical and easy to use. Hence, in this, there is an attempt to explore a better machine learning based model for an early detection of PD from the voice samples of the subject.

II. RELATED WORK

In [1] authors used a novel technique for the classification of subjects into Parkinson diseased and control subjects by detecting dysphonia. In their work, pitch period entropy (PPE) a new robust measure of dysphonia was introduced.The data was collected from 31 people (23 were PD patients and 8 were healthy subjects) which comprised of 195 sustained vowel phonations.they used linear kernel support vector machine (SVM). Their proposed model achieved an accuracy of 91.4%. In [2] Authors used to separate the healthy subjects from PD subjects. Ipsita Bhattacharya used a tool for data mining known as weka. They used SVM, a supervised machine learning algorithm for the classification purpose.Prior to classification, the data preprocessing was done on the dataset. Different kernel values were used to get the best possible accuracy by applying libSVM. The linear kernel SVM produced the best accuracy of 65.2174%, whereas the RBF kernel and polykernel SVM achieved the accuracy of 60. 8696%. In [3] authors suggested a model for differentiating the control subjects from the PD subjects. In their study, the data was collected from 40 subjects (20 were healthy subjects and 20 were PD subjects). From each subject, 26 voice samples were recorded which include short sentences, words, numbers and sustained vowels For classification, they used SVM and Knearest neighbor (k-NN)

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IOT Based Smart Parking System

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ABSTRACT: This paper discusses problems faced with traditional parking lots. It also lists the impact and inconvenience caused because of inefficiency in traditional parking spaces. In this paper, the authors have suggested and designed a Smart Parking System using IOT Technology, which will allow the users to find a vacant parking slot in a given area. It also avoids needless traveling through already filled parking lots. In this paper, the authors present a novel parking system with IoT over Wi-Fi and RFID. The authors suggest an IOT based solution to the issue using a mobile app, IR sensors, RFID, and Arduino as key components. With the solution's help, users can easily look for nearby parking lots alongside real time availability in each parking lot. They can also block the desired parking slot through the app followed by reaching the parking lot and authenticating using an RFID tag. Upon exit, the amount to be paid is determined using the time the service was used, which is determined using IR sensor data, and payment is processed using the linked in app wallet. This technology improves the overall efficiency, reliability, and convenience and reduces the precious resources in searching for parking spaces and pollution.

KEYWORDS: IoT (Internet of Things), Sensors, RFID, Arduino Nano, Smart Parking, Smart Cities, Traffic Congestion, Android Application

I. Introduction

The most basic definition of the internet of things (IoT) encapsulates anything that can be connected and controlled or monitored over the internet. IoT includes a network of sensors, smart devices, actuators which makes our day-to-day work more manageable. Activities and processes can be remotely tracked, monitored, and controlled over the internet. IoT extends the use of the internet by creating a network of 'Things' that can interact. It provides a vision where things (home devices, sensors, wearables) become intellectual; with the help of cloud computing, IoT becomes highly scalable and smart. Any number of nodes can be added or removed from the network; data can also be fetched, analyzed, and monitored in real-time, reducing human intervention and efforts. A significant problem that citizens worldwide face today is finding a nearby parking lot and then finding a space inside the lot, especially in multi-level parking lots; this issue is magnified. Whether it is an airport or a mall, easing parking of vehicles is significant to any establishment. The survey of drivers conducted by IBM found that 81 percent of drivers say it frequently takes them over 20 minutes to find a vacant parking slot, with over 45 percent of drivers describing parking as their biggest motoring issue.[11] Our proposed system will make locating, booking, navigating, and paying for parking hassle-free, effective, seamless, and convenient. Today, in the era of technology, when most things are becoming smart through the use of technological advancement and the internet, public parking spaces are still a long way from smart. Developing and implementing an efficient, reliable, and proficient parking system in real-time is still a big issue for any parking facility. This problem can be resolved by connecting the parking lots to the internet through IoT and using sensors, as discussed in the paper.

II. Related work

[1] The sensors used in IoT based smart parking system stores and accesses data from remote locations with the help of the cloud these factors give raise to cloud of things (COT). The nodes could be monitored and controlled from any location the system that we propose provides information regarding the availability of the parking slots with the help of the mobile application the users from the remote location can book the parking slots. [2] An algorithm is used to increase efficiency of cloud-based parking system and network architecture technology is used. This algorithm is used to find the lowest cost parking space. Considering the number of parking space available and also considering the distance of the parking space from the user. The user can directly access the cloud-based server and find the information on the parking space. The user can also install an application in their mobile phones to access this information. With the help of this algorithm, waiting time of the user to find a parking space can be minimized. Security aspects are not included in this paper. [3] A wireless sensor node along with smart phone application is being used to find the parking space. Since wireless technology is used here the system has high accuracy and efficiency. In this system, onboard units are used to communicate with other vehicles. The user parks his vehicle in any one of the several bays available a mechanical lift lifts the vehicle out. A ticket key and id are given to the user and it is only known to the user which is used to retrieve the vehicle. The user need not carry any paper ticket since an RFID card is given to the user. The technology used here is economical. Security features must be improved to protect the user's privacy. [4] The author of smart parking system this survey has divided detector system and vehicle sensors into two math categories as intrusive sensors and non - intrusive sensors. Intrusive sensors are installed in holes on the road surface by tunnelling under the road. Non-intrusive sensors do not affect the surface of the road and it can be easily installed and maintained. Smart parking system helps us to resolve

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An Overview of Blockchain Security and Privacy

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ABSTRACT: Blockchain is a decentralized ledger that may be used to safely exchange digital currency, make deals and complete transactions. Each network member has access to the most recent encrypted ledger copy in order to validate a new transaction. The blockchain technology has a number of benefits, including decentralization trustworthiness, trackability, and immutability. This paper describes the blockchain architecture and explains the concept, characteristics, and importance of blockchain in security, as well as how Bitcoin works and how to improve IoT security. It tries to emphasize the importance of Blockchain in defining the future of cyber security, cryptocurrency, and IoT adoption. This article discusses the importance of blockchain technology in a variety of technological domains, as well as its advantages over traditional systems.

KEYWORDS: Blockchain,NetworkSecurity,Bitcoin,Decentralizedserver,Transactions.

I. Introduction

The Internet of Things (IoT) is a network that connects various computing units or devices that can send data. IoT expands the capabilities of these devices and the ways in which they can be interacted with. Cloud servers connect the devices, and the data is kept on these servers [1]. Because the data on such servers is trust-based and centralized, it contains numerous loopholes and is prone to security attacks. We need to employ Blockchain technology to make IoT systems secure, trustworthy, decentralized, and even more useful.

Cybersecurity is the protection of any and all systems connected to the internet, including hardware, software, and data, from cyber-attacks. Security encompasses both cybersecurity and physical security in order for businesses to completely protect their systems against illegal access to any data or systems [2]. Cybersecurity refers to the ability to safeguard data integrity, confidentiality, and accessibility.

A cryptocurrency is a marketable digital asset or digital form of money that is exclusively available online and is based on blockchain technology. Cryptocurrencies, as the name implies, rely on cryptography to verify and safeguard transactions. The most fundamental attribute of a cryptocurrency is that it is not controlled by a central authority; the blockchain's decentralized structure allegedly renders cryptocurrencies immune to government control and meddling. Private and public keys can be used to send cryptocurrency directly between two parties. These transactions can be made with cheap processing fees, allowing consumers to avoid the mediator's high expenses.

The major goal of this research paper is to provide guidance in the realm of blockchain technology and to implement it in the areas of cyber security, cryptocurrency, and the Internet of Things.

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IOT ENABLED MULTI-HEALTH PARAMETER DETECTION USING MACHINE LEARNING

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ABSTRACT: The COVID 19 outbreak compelled government all around the world to impose lockdowns in order to assess the virus's spread. Deep Learning approach is used in this project computer vision and CNN classifiers to help maintain a secure environment and ensure persons protection by automatically monitoring public places to avoid the spread of the COVID-19 virus. Wearing a face mask in public areas according to study results greatly minimizes the chance of transmission. The system describes our Arduino UNO-based body temperature sensing and spO2 level. The goal of the project is to create a portable face mask detection and temperature reading device that can detect whether or not someone is wearing a face mask and whether or not their temperature is within a certain range.A reliable and portable SpO2 blood-oxygen-level monitoring system. The system was created with the goal of being user-interactive and its architecture was kept as simple as possible. The system is based on a MAX30100 sensor which may provide highly accurate findings.

KEYWORDS:COVID 19, face mask, Arduino UNO, body temperature sensor, MAX30100 sensor.

I. Introduction

Humans have been infected with a new virus strain known as novel coronavirus (nCoV) which has never been seen before in humans. Face mask detection, temperature detection, and hand sanitizing can be integrated with embedded systems for applications in railway entrances, airport entrances, office entrances, museums, amusement parks, schools colleges and other public places to ensure public safety as demanded by Covid-19. A face mask detection is a technique to find out whether person is wearing amask or not.The MLX90614 is a high-performance Infrared Temperature Sensor that may be used to detect a temperature check-up automatically and decide whether or not to open the door.The MAX30100 sensor is a pulse oximeter that measures the blood oxygen level also known as SpO2 and displays it as a percentage on an LCD display. As a result, a smart entry device that identifies a facemask at the door opening mechanism and automatically measures human body temperature has been developed.

II. Related work

In [1] authors used a smart device based on AI is proposed (Raspberry Pi with AI model and camera) which detects whether a person is wearing a face mask and sends us a warning message (via mobile app). A smartphone app is included with this gadget. When people are not physically present in their homes a mobile app detects if someone enters their home. This smart device only unlocks the door if guests are wearing a face mask. This device can be used at any time of day or night. It can be employed in a variety of settings including malls, stores, hospitals, and temples.In [2] authorsdemonstrated a mask detection system capable of detecting any form of mask as well as masks of various shapes from a video stream in order to comply with government laws. Mask detection from images/video streams is done using deep learning methods and the Python PyTorch package. The proposed method can distinguish between those who are wearing masks and those who are not.In [3] authors usedAny commercial mall, hotel or apartment entry can benefit from the proposed approach. As a result, a cost-effective and dependable approach of utilising AI and sensors to create a healthy atmosphere has been developed. The Face Mask Detection technique which is implemented in the TensorFlow software library is used to evaluate the proposed framework. A non-contact temperature sensor is also used to measure the person's body temperature. By utilising Internet of Things (IoT) technologies this proposed system can detect COVID 19 users.In [4] authors used a wireless microcontroller-based heart rate and oxygen

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Intrusion Detection System Using Machine Learningand Deep Learning in Wide Area Network

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ABSTRACT: Information security is ensured in large part by intrusion detection, and the fundamental technique is to reliably recognize different network attacks. In our paper, we investigate how to build an intrusion detection system based on deep learning, and we suggest a deep learning strategy for intrusion detection utilising recurrent neural networks (RNN-IDS). Furthermore, we examine the model's performance in binary classification and multiclassclassification, and we examine the effects of the number of neurons and various learning rates on the performance ofthe suggested model. We contrast it with various machine learning techniques presented by other researchers on the benchmark dataset, including J48, Artificial Neural Network, Random Forest, Support Vector Machine, and others. Theexperimental results demonstrate that RNN-IDS performs better in both binary and multiclass classification than traditional machine learning approaches, making it a very good choice for developing a classification model with high accuracy. The RNN-IDS model boosts intrusion detection's precision and offers a fresh approach to the field's investigation.

A significant challenge now is computer security. To guarantee a certain level of compliance, tools and procedures have been devised. The Intrusion Detection Systems are among them (IDS). The goal of traditional IDS is to spot suspicious activity and behaviors as well as attack attempts on a network. IDS calls for the integration of techniques like Deep Neuron Networks (DNN) and Recurring Neuron Networks (RNN) more precisely long-term memory due to factors like the unpredictability in searching for types of assaults and the increasing complexity of advanced cyber- attacks (LSTM). In this submission, the Network Intrusion Detection System was targeted for attacks using DNN and LSTM (NIDS). For all deep learning methods in this memory, we utilized four hidden layers, 41 input layers, 2 output layers, and 100 iterations. Actually, learning is optimized while the other parameters are kept constant at 0.01 each. After that, for DNN, the first hidden layer's number of neurons was increased to 1280, however this did not result in a noticeably higher level of accuracy. Therefore, we set the total number of neurons to 1024 and the total number of neurons in all hidden layers in the LSTM to 32. The comparison of the results led to the conclusion that a three-layer LSTM outperforms all other traditional machine learning and deep learning methods.

KEYWORDS: IDS, NIDS, machine learning, deep learning, CIC-IDS2017.

I. INTRODUCTION

Information systems are today's key component of every business, regardless of size or industry. However, the information systems' ability to store and provide services makes them possible targets for several kinds of attacks. These attacks can have disastrous results due to their extreme diversity and system-specificity. In this environment, computer security has grown to be a significant concern, and research in this area is expanding. To guarantee a level of safety that satisfies the requirements of modern living, numerous tools and systems have been devised. The Intrusion Detection System is one of these tools (IDS).

IDS are tools created to recognize anomalous actions and behaviors intended to obstruct a system's normal operationas well as to detect attempted attacks on a network. Network-based intrusion detection systems (NIDS), host-based intrusion detection systems (HIDS), and hybrid IDS are the three categories under which intrusion detection iscategorized. and by keeping an eye on all network traffic, find nefarious activities. In order to capture all networktraffic segments, IDS systems are typically implemented by setting the network interface card to promiscuous mode. While HIDS is employed to track encrypted data transit to a particular host. It uses data gathered from a certain computer system to function. The traits of NIDS and HIDS are combined in hybrid IDS. They enable network-based IDS to monitor the network and terminals.

IDS are technologies created to identify insiders and outsiders using the computer network in an unauthorized or harmful way. It is required to have specialist software to gather data going through the system and which will afterwards be used in the detection phase in order to detect attacks that a system may face. Network traffic sniffers like Wireshark, Snort, and Prelude are just a few of the tools that can complete this duty. However, because there are so many of them, processing them using current techniques takes a while. K-means, Hidden Markov Model, and Self- Organizing Maps (SOM); neural networks, decision trees, Naive Bayes, and Support Vector Machine are examples of machine learning (ML) based IDS systems. Deep learning (DL) has recently transformed a wide range of fields and provided cutting-edge performances in areas like computer vision and natural language processing.

INTRUSION DETECTION AND PREVENTION SYSTEM FOR ANDROID DEVICES

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ABSTRACT: With the presence of the Internet and the frequent use of mobile devices to send several transactions that involve personal and sensitive information, it becomes of great importance to consider the security aspects of mobile devices. And with the increasing use of mobile applications that are utilized for several purposes such as healthcare or banking, those applications have become an easy and attractive target for attackers who want to get access to mobile devices and obtain users' sensitive information. Network Security is to protect computer network against hacking, misuse, unauthorized changes to the system and securing a computer network infrastructure. A firewall is a mechanism used to achieve network security. It can be either hardware or software based, that controls incoming and outgoing network traffic based on a set of rules. Network attack is the intrusion or threat is defined as any deliberate action that attempts unauthorized access, information manipulation, or rendering the system unstable by exploiting the existing vulnerabilities in the system. An intrusion is any set of activities that attempt to compromise the integrity, confidentiality or availability of a resource. Intrusion Detection system (IDS) / Intrusion Prevention System (IPS) has become a prerequisite in computer networks. IDS/IPS is a device or software application that monitors network or system activities for malicious activities. These type of IDS/IPS used in the network is known as Network based IDS/IPS. Network based Intrusion detection/prevention system (NIDPS) protects a network of hosts and systems.

I. Introduction:

Being an open-source operating system, the Android Operating System is more vulnerable to attacks. The pervasion of malicious applications is rampant in the Android market and it is on the rise like never before. The Android applications are downloaded by the user from the official market such as Google Play store and also from the unofficial markets. The unofficial market is full of malicious applications which lure the customers to download their apps with a heavy discount on products or payback offers.

Intrusion in lay terms is unwanted or unauthorized interference and as it is unwanted or unauthorized, it is normally with bad intentions. Intrusions are normally carried out by people outside the organization. Sometimes, intrusions can be caused by internal authorized persons carrying out these attacks by misusing their authorization or by internal authorized persons who go beyond their area of authorization and such attacks also need to be protected against.

An Intrusion Detection System (IDS) is a hardware/software combination or a combination of both hardware and software that detects the intrusions into a system or network. IDS complement a firewall by providing a thorough inspection of both the packets' header and its contents thus protecting against attacks, which are otherwise perceived by a firewall as seemingly benign network traffic.

Firewalls look at the control rules; a packet is either allowed or denied. A rule specifies whether a host or a network, or an application should be allowed into the trusted network. To check the rules, a firewall has to just inspect the header of the TCP/IP protocol such as FTP, HTTP, or Telnet. However, it does not inspect the data contents of the network packet. Even if the data contains a malicious code, the firewall will allow this packet to pass through as the packet header has conformed to the rules configured in the firewall. Hence, you can still have a firewall but your trusted network can be compromised.

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Organ Donation-An Andriod Application

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ABSTRACT: Organ Donation is the transfer of biological tissue or an organ from a living or deceased person to a living recipient in need of transplantation. Transplantation organs and tissues are removed in asurgical process after an assessment, based on the donors medical and social history which are suitable for transplantation. This Android app will assist users in finding organ donors and doctors. This system has two entities: Admin and User. Admin can log in using their credentials. Admin has access to all Doctors. And may add, update, and delete Doctors. Admin may see and assign Doctors, Donors, and meeting details, among other things. The administrator has access to the donation list as well as the user list. Users can create an account and login using their credentials. If they forget their password, send them an email with an OTP and a password reset link. In the event of a security breach, the user may change their password. View and make changes to their profile. The user can manage requests by adding and changing them. The user can also view the allocated Doctor and donor information, as well as chat with the administrator. They can view and choose from a list of doctors, as well as information about them. They may see and control all previous donations. Admin Notificattion: Doctors and Donors Have Been assigned to the Request They will be notified of their chats as well.

KEYWORDS: Organ, Admin, Donor, Doctor, User.

I. INTRODUCTION

India is believed to have performed the second-largest number of transplants in 2019, however, it still lags behind. Only 0.01% of persons donate their organs after death, with a higher proportion of living donors in India. Cadaver donations account for only about 5% of all donations. Lack of awareness, religious and superstitious beliefs and severe rules are some of the key factors. Some people are concerned about this societal issue, but they are unsure of what to do or how to donate. Another problem is that many people are illiterate and unaware of the significance of this cause. As a result, we are going our country an Organ Donation Android Application to raise awareness and provide our people with an easier way to save lives. The procedure of physically taking an organ or tissue from one person (the organ donor) and implanting it into another person is known as organ donation (the recipient). The recipients organ has failed or been damaged by disease or injury, necessitating transplantation is one of the most significant advances in contemporary medicine. Unfortunately, the demand for organ donors outnumbers the number of people willing to donate. Every day, 21 people in the United States die while waiting for an organ transplant, and over 107,380 men, women, and children are waiting for life-saving organ transplants.

According to UNOS, more than 40,000 Organ transplants will be conducted in the United states in 2021. The majority of recipients are aged 50 to 64. To date the majority of donor organs have come from deceased donors have come from deceased donors, although the proportion of living donors are increased year after year since 1988. Kidney transplants are the most common type of transplant surgery; the intestines are the least common single-organ transplants. Organs are matched based on various factors, including blood type and the size of the organ required. The length of time someone has been on the waiting list, how sick they are, and the distance between the donor and the potential recipient are all factors.

Implementation of Five Level Multilevel Inverter with Reduced Leakage Current

Publisher: IEEE

Geetha K All Authors

Abstract:
As nonrenewable fuels deplete; most of the businesses are transitioning to renewable energy. Solar energy is a abundant in nature and is a reliable source of renewable energy. In today's photovoltaic systems, multiple inverters are employed to convert DC power to AC power. Because of the low harmonics and low leakage current levels, multilevel inverters are more efficient than full-bridge inverters. In the presented work, various types of grid-connected multi-level inverters are simulated and results are compared. According to the simulation output, the value of leakage current is lowest in the case of a 5-level transformer less multilevel grid-tied inverter.

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Conference Location: Ballari, India

Integration of DC-Bypass and Active Clamping Technique to Reduce Leakage Current in Full-Bridge Single-Phase Grid-Connected Inverter

Publisher: IEEE

K Geetha All Authors

Abstract:
Due to its advantages over transformer based inverters, transformerless grid-tied inverters are currently one of the most important requirements in the solar industry. Yet, the problem of
Due to its advantages over transformer based inverters, transformerless grid-tied inverters are currently one of the most important requirements in the solar industry. Yet, the problem of
leakage current between the solar panel and the grid must be solved, and total harmonic distortion should be reduced further by new topologies to increase the efficiency of the grid-tied transformerless inverter. DC bypass and NPC techniques alone are found to be effective in decreasing the common mode current. While the integration of the two will yield better performance. This paper presents a new leakage current reduction technique using the combination of DC-bypass and active neutral point clamping technique in the conventional H5 GTI. The presented inverter is simulated in the MATLAB tool. The analysis indicates that the freewheeling current of the presented topology is 8.5 mA which is considerably lesser than the conventional H5 Inverter. Also, the THD after filtering is 2.6% and the theoretical calculations show that the efficiency of the inverter is 97.54%.

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Traffic Congestion Studies and Solutions for Kengeri- Hoysala Junction, Bengaluru

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Abstract— Bengaluru occupied top place in the list of top most traffic-congested cities in India and the world in 2019. Kengeri is a prime location situated in south-west Bengaluru and surrounded by several public offices, educational institutions, commercial zones, stone crushing mills, hospitals and IT hubs. Bengaluru's upcoming and well settled IT hub 'Kengeri global village' faces congestion through nearby educational institutions non-functioning traffic signals, insufficient road width to carry current traffic conditions are attributed to the problem. Further increase in population and number of vehicles can further aggravate the situation. Traffic volume is heaviest on bangalore university road and mysore road. It is highest for 2 hours in the morning and 2 hours in the evening. Road widening, relocating parking areas, providing traffic signals, sufficient turning radius, etc., can control the traffic. Constructing a flyover on Banglore-mysore stretch can ease the traffic flow. The signal-less solution mentioned in this study provides an innovative approach to mitigate traffic congestion.

Keywords: Traffic congestion, Junction, traffic signals, signal less solution, median stretch

I. INTRODUCTION

Traffic congestion has become a significant problem that need the attention of city planners, municipal authorities, road engineers, and traffic controlling personnel in many cities. Many cities in across globe are facing this problem due to reasons such as rapid growth in of vehicular traffic, heterogeneous traffic flow, unplanned or ill-planned Roads, indiscplined road users, etc. According to [1] TomTom survey index 2019 published by a location technology firm based in the Netherlands, five major cities of India ranked in the world's most congested cities, with Bengaluru topping the list shown in Table 1. This index indicates that compared to Bengaluru's baseline uncongested conditions, travel time during rush hours in Bengaluru will take 71% more time. All other top 10 ranking cities are from developing countries.

Table 1. Highly traffic-congested cities in the world as per TomTom Traffic Index – 2019

Rank	City	Country	Congestion level
1	Bengaluru	India	71%
2	Manila	Philippines	71%
3	Bogota	Columbia	68%
4	Mumbai	India	65%
5	Pune	India	59%
6	Moscow	Russia	59%
7	Lima	Peru	57%
8	New Delhi	India	56%
9	Istanbul	Turkey	55%
10	Jakarta	Indonesia	53%

Table 2. Heavy traffic-congested cities in the world as per TomTom Traffic Index – 2018 and 2017

Rank	City	Country	Congestion level	
			2018	2017
1	Mumbai	India	65%	66%
2	Bogota	Columbia	63%	62%
3	Lima	Peru	58%	50%
4	New Delhi	India	58%	62%
5	Moscow	Russia	56%	57%
6	Istanbul	Turkey	53%	59%
7	Jakarta	Indonesia	53%	61%
8	Bangkok	Thailand	53%	55%
9	Mexico City	Mexico	52%	52%
10	Recife	Brazil	49%	47%

Bengaluru is not in the top ten rankings in [2] 2017 nor in [3] 2018. It appeared in 2019 in the top ten list that too at number one position. It establishes the alarming rise in the traffic congestion in Bengaluru in the recent period an urgent need to find solutions to this issue.

When we compare Table 1 and Table 2, Bengaluru city, which took the top spot in the 2019 study, was nowhere in the top ten during the traffic index of 2018 & 2017, resulting in an exponential rise in traffic congestion in Bengaluru city

Table 3. Vehicles registered in Bengaluru according to TomTom traffic index

TomTom Traffic Index Data	
Year	Vehicles registered in Bengaluru
JULY 2019	82,53,218
DECEMBER 2018	78,84,998
DECEMBER 2017	72,58,889

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Survey on Skin Cancer Prediction with Image Segmentation on Cloud Using Machine Learning Models

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ABSTRACT: Early location of skin disease, especially melanoma, is pivotal to empower progressed treatment. Because of the quick development in the quantity of skin malignant growths, there is a developing need of modernized examination for skin lesion. The cutting edge public accessible datasets for skin lesion are regularly went with an extremely restricted measure of division ground truth marking. Additionally, the accessible division datasets comprise of uproarious master explanations reacting the way that exact comments to address the limit of skin lesion are relentless and costly. The sore limit division is imperative to find the sore precisely in dermoscopic pictures and sore determination of various skin lesion sorts. In this work, we propose the completely mechanized profound learning group techniques to accomplish high affectability and high specific in lesion limit division.

I. Introduction

Skin disease is one of the significant kinds of malignancies and its rate has been expanding over the previous many years. Deep Learning designs can help us with staying away from the progression of manual element extraction. This can save time and can alert the patient if there is a any sign. We have attempted to fabricate a vigorous and precise deep learning model that will help dermatologists in recognizing skin malignant growth and will assist with making fundamental moves absent a lot of delay. By taking care of the prepared deep learning models with skin lesion picture information, the specialist can know the sort of sore and choose whether it holds the possibility to metastasize later on or not. There are higher odds of restoring, if the malignant growth is identified in its beginning phases, the fix rate can be about more than 90%.

II. Related work

The research on neural architecture search had been conducted before the interest in deep learning emerged. Early systems involved random search, grid search and evolutionary algorithms to find the proper architecture of a classic (shallow), fully connected neural network. With the growth of the size of neural networks, many difficulties have arisen due to long training time which limit the possibility of testing new architectures. Not only the training time become longer, but also these arch space larger. With the growth of network structures, the number of hyper parameters describing the architecture increases significantly. Each NAS framework can be described by three elements: search space, search method and performance evaluation strategy. The search space defines which architecture types could be found during the process. The search strategy defines the way the search space should be explored. The performance evaluation strategy defines the way the performance of the proposed network is used. The assumed search space has a crucial impact on the search process. If the search space is too small it leads to poor performance, while on the other hand, if it is too big it could significantly extend the search time. The search space can be described by such factors as the number of layers, number of neurons within the layers, type of layers, activation function, etc. In most cases, the search space is conditional, which means that some hyperparameters have an in lesion on the total number of hyperparameters e.g. the increase of a number of layers will increase the number of hyperparameters describing those layers. Two types of search space can be distinguished: the network-based search space, and the cell-based search space. The network-based approach explores the whole architecture, whereas the cell-based approach just the cells that are then stacked to solve a given problem. The number of cells in the stack depends on the task being solved. Currently, numerous search methods are used to explore the search space including random search, grid search, evolutionary algorithms, Bayesian optimization, reinforcement learning (RL), and the gradient methods, which are nowadays gaining ground and popularity. The performance evaluation strategy is the way in which the performance of the neural network is estimated. The simplest way is to train each network until convergence and then measure the validation accuracy. Although it provides an accurate estimate of the network architecture, this method is very time-consuming. Many methods have been proposed to speed up the process of network evaluation during the architecture search. Lower delity estimates involve network evaluation based on, for instance, limited training time the limited size of dataset or reduced size of photos in the dataset. The learning curve extrapolation strategy allows accelerating the search process by rejecting structures at an early stage of training based on the prediction of their performance. Another approach to speed up the structure performance estimation is to use weight inheritance or function preserving transformation, instead of training the network from scratch.

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A System For 3D Reconstruction From Multiple Views

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Paper ID-111

ABSTRACT: 3D reconstruction is a longstanding ill-posed problem, which has been explored for decades by the computer vision, computer graphics, and machine learning communities. There is an increasing need for geometric 3D models in the movie industry, the games industry, mapping (Street View) and others. Generating these models from a sequence of images is much cheaper than previous techniques (e.g. 3D scanners).

In this project, we focus on the problem of 3D scene reconstruction from multiple uncalibrated views. The immediate goal of this project is to create a software package that allows for grouping images belonging to the same scene automatically and perform some interesting evaluations to help decide which keypoint descriptor is more suitable for image matching before 3D reconstruction given the restricted resources. After matching the images, use the results to reconstruct a 3D view for each scene.

KEYWORDS: 3D reconstruction, Camera calibration, Computer Vision, Structure from Motion, Multi-View Stereo, 3D models, Kinect.

I. INTRODUCTION

3D reconstruction from multiple images is the creation of three-dimensional models from a set of images. It is the reverse process of obtaining 2D images from 3D scenes. In recent decades, there is an important demand for 3D content for computer graphics, virtual reality and communication, triggering a change in emphasis for the requirements. Many existing systems for constructing 3D models are built around specialized hardware (e.g. stereo rigs) resulting in a high cost, which cannot satisfy the requirement of its new applications. This gap stimulates the use of digital imaging facilities (such as cameras)

The 3D scene reconstruction from multiple view images is an increasingly popular topic which can be applied to street view mapping, building construction, gaming and even tourism etc. When the reconstruction of a 3D scene is needed, a reliable computer vision based reconstruction method is much more cost-efficient and time-efficient than traditional methods such as aerial photo filming. The 3D scene reconstruction applications such as Google Earth allow people to take flight over entire metropolitan areas in a virtually real Google Earth allow people to take flight over entire metropolitan areas in a virtually real 3D world, explore 3D tours of buildings, cities and famous landmarks, as well as take a virtual walk around natural and cultural landmarks without having to be physically there. A computer vision based reconstruction method also allows the use of rich image resources from the internet. 3D world, explore 3D tours of buildings, cities and famous landmarks, as well as take a virtual walk around natural and cultural landmarks without having to be physically there. A computer vision based reconstruction method also allows the use of rich image resources from the internet.

II. LITERATURE SURVEY

3D reconstruction of buildings has been an active research topic in computer vision, as well as in digital photogrammetry, during the past years. 3D building models are gaining increasing popularity in the areas of urban planning, tourism, etc.
For instance, in April 2019, researchers from the University of Denver used drones for capturing high-resolution images to create a 3D reconstruction of a World War II-era Japanese internment camp in southern Colorado. Furthermore, in June 2018, the National Museum of Antiquities in the Netherlands unveiled the head of Julius Caesar, which was reconstructed with 3D reconstruction technology using a 3D scan of a marble portrait in the museum's collection. 3D reconstruction can help preserve cultural artifacts, architecture, biofacts or ecofacts, and cultural landscapes, by capturing their shape and

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A Survey Of Scanning Techniques For 3D Reconstruction

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Paper ID-139

ABSTRACT: 3D reconstruction technologies have evolved over the years. In this paper we try to highlight the evolution of scanning technologies. The idea of a survey came up with our decision to look at 3D reconstruction methods. Little has been written about the methods in general, yet many developments have taken place in this area. This survey will prove useful for those intending to embark on research in 3D reconstruction technologies or are considering acquiring a 3D scanner. The survey takes a look at the major reconstruction methods, which are; Laser triangulation, Stereoscopy, Conoscopic holography and Moiré Interferometry. A review of the major producers of scanning technology for 3D reconstruction is also carried out.

KEYWORDS: 3D Reconstruction, Triangulation, Holography, Stereoscopy, Conoscopic holography.

I. INTRODUCTION

3D reconstruction methods are classified into passive and active. Passive methods do not involve interaction with the object, whereas active methods use contact or a projection of some form of energy onto the object. Our main focus in this paper is given to the active methods that use the projection of a form of energy onto the objects, light in our case. Active methods involving contact with the object are being phased out due to their slow reconstruction process and the need for less contact with the object to avoid them getting damaged (Curless, B). In this paper, our main focus will be on the optical non contact methods that offer faster reconstructions since they are commonly applied in the manufacturing industry. In the field, the main method used to realise reconstructions is optical laser triangulation. Section two deals with the various methods of 3D reconstruction, whereas section 3 analyses the 3D scanners on the market.

We make comparisons based on the technical specifications provided by the manufacturers. The last section contains a summary of all the results from the survey. Given the importance of faster prototyping in modern industry, one can easily appreciate the amount of time and money that is saved when 3D scanning methods are used. At present many of the leading manufacturing industries have incorporated in their production lines systems for 3D scanning. This has helped increase their productivity and save on the time it takes for a product to be released on the market. On the whole, the benefit of these scanning systems is the improved product quality, time to market and the reduction of the overall production cost.

II. RECONSTRUCTION METHODOLOGIES

2.1 Laser triangulation

Laser triangulation is the most common method used in commercial 3D scanners. The principle of operation of Laser triangulation involves the projection of a ray of light over an object in the form of a point. If the object is to be captured by a camera, only a bright spot should be detected. Therefore knowing with precision the relative angle of projection with respect to the base line, it is possible to determine the position of the point in space. The variants of laser triangulation are based on the many ways of projecting and detecting the light rays. In the case of a point source, the whole scene has to be scanned both vertically and horizontally to obtain the depth.

If instead of projecting a point, a line is projected, the depth of all the points on the line can be obtained at the same time. This explains why techniques based on the projection of a line are much faster than the projection of a single point. One may use various methods to project the light onto the scene, each one with its merits and demerits. The precision, the presence of blind spots, where triangulation is made impossible, and the speed of scanning the scene are the principle factors to be taken into account when choosing the kind of technique

A Novel Approach For Skin Cancer Prediction With Image Segmentation On Cloud Infrastructure Using Machine Learning Models

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Paper ID-114

ABSTRACT: As indicated by world disease Research reserve 30,000 individuals are influenced by skin cancer each year. Skin disease the unusual development of skin cells, frequently creates on skin presented to the sun. Be that as it may, this normal type of malignancy can likewise happen on spaces of your skin not customarily presented to daylight. There are two significant kinds of skin cancer are Melanoma, Benign. Mechanized conclusion of different skin lesion illnesses through clinical dermoscopy pictures is as yet an exceptionally difficult undertaking. In this work, an incorporated model for division of skin lesion limits and arrangement of skin lesion is proposed by falling novel deep learning networks. In the main stage, a novel full goal convolutional networks (FrCN) is used to section the limits of skin injuries from dermoscopy pictures. At that point, the segmented Lesion are passed into a deep residual network for grouping.

KEYWORDS: Deep learning, convolutional neural network, malignant, melanoma.

I. INTRODUCTION

Skin malignant growth is one of the significant kinds of tumors and its frequency has been expanding ridiculous many years. Deep learning designs can assist us with staying away from the progression of manual element extraction. This can save time and can alert the patient if there is a suspicious sign. We have attempted to assemble a vigorous and precise deep learning model that will help dermatologists in identifying skin malignant growth and will assist with making important moves absent a lot of postponement. By taking care of the prepared deep learning models with skin lesion picture information, the specialist can know the kind of lesion and choose whether it holds the possibility to metastasize later on or not. There are higher odds of restoring, if the disease is recognized in its beginning phases, the fix rate can be about more than 90% [2]. Skin malignancy determination is led utilizing visual assessment of the lesion and afterward the clinical examination is directed if there is a doubt. Picture based classification utilizing deep learning, specifically, have as of late shown impressive exactness in clinical picture classification.

II. RELATED WORK

The software product produced is an application by name "Design and implementation of Skin Cancer Predictor system using Machine Learning Algorithms over Live cloud infrastructure". According to world cancer Research fund 30,000 people are affected by skin cancer per year. [2] Skin cancer the abnormal growth of skin cells, most often develops on skin exposed to the sun. But this common form of cancer can also occur on areas of your skin not ordinarily exposed to sunlight. There are two major types of skin cancer are Melanoma, Benign. Automated diagnosis of various skin lesion diseases through medical dermoscopy images is still a very challenging task. In this work, an integrated model for segmentation of skin lesion boundaries and classification of skin lesions is proposed by cascading novel deep learning networks. In the first stage, a novel full resolution convolutional networks (FrCN) is utilized to segment the boundaries of skin lesions from dermoscopy images. Then, the segmented lesions are passed into a deep residual network for classification. To develop a Computer Aided Diagnosis (CAD) System to detect and classify various skin lesions by deep learning Techniques. Skin tumor disease is one of the most commonly diagnosed cancers in the world. Indeed, melanoma (i.e., malignant skin tumor) usually starts when melanocyte cells begin to grow out of control. Detection of skin lesion with correct diagnosis in its earliest stage is highly curable and increases the survival rate. In clinical practice, dermoscopy has become a gold standard imaging device which assists dermatologists to improve the screening of skin lesions through visualizing prominent features present under the skin surface. In spite of that dermoscopy screening provides better visualization of skin lesions and improves the sensitivity and specificity compared to visual inspection, dermatologists still encounter difficulties of achieving higher performance of lesion diagnosis. Technology plays a central role in our everyday life. Technology assistance at various stages of skin lesion processes can significantly enhance the segmentation and classification using deep learning. Proper learning of deep learning networks demands a huge number of training samples. However, a limit on the size of medical image dataset, especially a limit on reliable annotated ground-truths, is one of the challenges in adopting such deep learning approaches. We have applied different augmentation

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A Comprehensive Study On CloudComputing Paradigm

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Paper ID-140

ABSTRACT: Cloud computing is regarded as massively scalable, an on-demand configurable resources computing model and is one of the latest topics in the information sector. It offers the cloud infrastructure in a distributed rather than dedicated infrastructure where clients can have full access to the scalable, reliable resources with high performance, everything is provided to the clients as a utility service over the internet. Data generated by IoT tagged objects is high, cloud is key to store the unpredictable data generated by these tagged devices and it is the forward stepped towards the green computing, it eliminates the setups and installation steps as the cloud client accessing the hardware resources co-exist on different platform in distributed way, Energy optimization, reduction in excessive heat and power consumption in cloud environment differentiates it from the traditional computing, which greatly proves to be the eco-friendly.

KEYWORDS: Cloud Computing, On-demand, Distributed, Dedicated, Utility, Energy Optimization, Eco- friendly

I. INTRODUCTION

As the academic research is dynamic in nature, so the conceptual terms, frameworks and definitions are not finite, different authors put forward different opinions on cloud computing terminologies. Gartner's cited definition as Cloud computing is a style of computing where adaptable and versatile information technology- empowered capacities are given as an administration to numerous outside clients utilizing Internet advances. Cloud computing is a ubiquitous paradigm where everything offered to the cloud client is treated as service and it is regarded as a utility computing model which offers the wide range of services to the users on-demand bases in a distributed fashion, due to its versatility, agility both medium and large-scale emerging and developing technologies are adopting the cloud. As per the definition provided by the National Institute for Standards and Technology (NIST) "cloud computing is a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction".

II. CLOUD COMPUTING EVOLUTION

Every entity that is being part of a system is having a definite evolution, As far as Cloud Computing is concerned, there is no exact date which mentions the evolution of it, However in 1960s, John McCarthy, Douglas Parkhill, and others explored the idea of computing as a public utility, because of the existence of mainframe computers, during that period, the clients were accessing the central computing power through dummy terminals, which enable the clients to access the mainframe computer. With high cost and maintenance, it was not feasible for the organizations to buy these critical resources, and was the most challenging task for the big companies and organization to stay in the business market, and then there arose the concept of shared access to the single computing system in order to save the cost of buying separate machines. Evolution in Information Technology is not all of a sudden process rather it is a step-by- step transformation that brings a lot to cherish for organizations, companies. IMB launch the operating system in 1970 known as Virtual Machine (VM), this enabled the companies and organizations to run their operations on the operating systems simultaneously on more than one system with own memory and processing unit, VM became the initial phase towards the evolution of new technology known as Virtualization, collective collaboration of different computing platforms like Centralized, Parallel, Cluster, Distributed and Grid Computing gave birth of today's most talked computing paradigm known as Cloud Computing.

Figure.1 Cloud Computing Evolution

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(23)

A Review Model of Uber Data Analysis Using Data Science

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Paper ID-115

ABSTRACT: Urban liveability is a key concept in the New Urban Agenda (NUA) adopted by the United Nations (UN) in 2016. The UN has recognized that effective benchmarks and monitoring mechanisms are essential for the successful implementation of the NUA. However, the timely and cost effective collection of objective international quality of life urban data remains a significant challenge. Urban liveability indexes are often complex, resource intensive and time consuming to collect, and as a result costly. At the same time, competing methodologies and agendas may result in subjective or non-comparable data. Historically, transit has been a central organizing factor around which communities have been built. This paper explores the use of Uber data as a simple real-time indicator of urban liveability. Using data from the Uber Ride Request (URR) API for the Brazilian city of Natal, our preliminary findings suggest that Uber Estimated Time to Arrive (ETA) data is strongly correlated with selected quality of life indicators at a neighbourhood and region level. Furthermore, unlike other urban liveability indicators, our findings suggest that Uber ETA data is context-sensitive reflecting daily and seasonal factors thereby providing more granular insights. This preliminary study finds strong evidence that Uber data can provide a simple, comparable, low cost, international urban liveability indicator at both city and neighbourhood level for urban policy setting and planning.

KEYWORDS: Uber Data Science, Urban liveability indicators

I. INTRODUCTION

For nearly five decades, liveability has been referenced as a key attribute for community and urban planning worldwide. More recently, it has been firmly placed in the global policy lexicon by its inclusion in three of the principles and commitments of the New Urban Agenda (NUA) adopted by the UN in 2016 . The NUA is notable as it represents a significant international policy commitment in support of the Sustainable Development Goals (SDG), and more specifically SDG11, and what some have referred to as a pro-urban future. SDG11 sets out a goal for the international community to "make cities inclusive, safe, resilient and sustainable". While it is clear that the authors of the NUA perceived liveability as playing a role in eradicating poverty , and as an indicator of both social inclusion and cohesion and sustainable urban transport and transit systems , nowhere within the NUA or supporting documents the concept of liveability is defined . This is not entirely surprising. Indeed, authors have commented on the widespread use of the term, despite the ambiguity in meaning in policy documents and scholarly articles .

According to Newton, liveability can be defined as a set of attributes of a place, encompassing housing, neighbourhood and region aspects that contribute to residents' quality of life and well-being. A recent review of the literature on relevant indicators of liveability suggests a broad range of contributory indicators across policy domains (the natural environment, crime and safety, education, employment and income, health and social services, housing, leisure and culture, food and other goods, public open space, transport, social cohesion and local democracy), although the relative importance of each is unclear. Ruth and Franklin suggest that a "liveable city" requires the needs of the inhabitants of the city to be aligned with "built infrastructures and ecosystems that provide the goods and services on which lives and livelihoods in the city depend." They note that it is difficult to arrive at a generally acceptable definition of liveability because globalization, urbanization, new technologies and environmental constraints are impacting the expectations of the inhabitants.

II. RELATED WORK

Two distinct sources of related works are of interest to this study - publications related to urban liveability indicators and those related to using Uber data. The Economist Intelligence Unit (EIU) Global Liveability Index and the Mercer Quality of Living Ranking are two indices referenced widely in policy, media and academic literature. The EIU Global Liveability Index is an annual rating of 140 cities for relative comfort based on 30 qualitative and quantitative factors across five broad weighted categories (stability, healthcare, culture and environment, education, and infrastructure) constructed using a combination of external data points and the judgment of a group of in-house and external analysts . It is primarily used for employee mobility. Similarly, the Mercer Quality of Life Ranking evaluates living conditions in 450+ cities worldwide based on 39 factors, grouped in 10 categories - political and social environment, economic environment, socio-cultural environment, medical and health considerations, schools and education, public services and transportation, recreation, consumer goods, housing and natural environment. Scores are weighted to reflect their importance to expatriates. Like the primary focus is to support decisions in relation to employee mobility. It should be noted that Mercer do also offer services to municipalities to assess factors that can improve their quality of living ranking

A Survey Work On Line Following Versatile Robot Obstruction Aversion Utilizing Gunsight Innovation

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Paper ID-107

ABSTRACT: This paper portrays the line following robot utilizing arduino for reviewing , assessing and improving the transportation of essential materials inside the medical care foundations, ventures too. The proposed framework recognize the dark way and continue toward its on to the ground . This framework facilitates crafted by material movement just as limits the labor. This innovation focuses on the gotten, prompt and building transportation of merchandise. This paper plans to carry out controlled development of robot by tuning control boundaries and accordingly accomplish better execution. This robot is transcendently configuration to continue in a predefined way. To find this way two sensors are utilized. Robots like this are fundamentally utilized in mechanical plants involving of pick and spot office. This robot conveys parts from wanted source to objective by following fixed way. As of late part of exploration has been done to engage the robotization in clinics also in businesses. This robot is made to supply the fundamental products such infusions, medication, and so on. This paper is isolated into equipment and programming modules. Lately a lot of time and exertion have been spent on creating frameworks to empower a self-sufficient robot to follow a checked way utilizing a dream system. The Line Following Vehicle is an installed machine that can distinguish and follow the line drawn on the floor. By and large, the way is predefined and can be either noticeable like a dark line on a white surface with a high differentiated shading or it tends to be undetectable like an attractive field. It is an incorporated plan from the information on Mechanical, Electrical and PC designing. This paper presents a 9W LDR sensor based Line Following Vehicle plan and creation methodology which consistently coordinates along the dark blemish on the white surface. This minimal effort essential electronic part based line detecting robot can convey a sensible burden without getting off the line.

KEYWORDS: Ultrasonic, Infrared ,UNO ,Motor Driver, Servo Motor.

I INTRODUCTION

A line following vehicle is essentially a robot intended to follow a „line" or way previously foreordained by client. This line or way might be just about as straightforward as an actual white line on floor or as perplexing way checking plans for example inserted lines, attractive markers and laser manage markers. To distinguish these particular markers or „lines", different detecting plans can be utilized. These plans may fluctuate from straightforward ease detecting circuit to extensive vision frameworks. The decision of this plans would be subject to detecting precision and adaptability required. From mechanical perspective, line following vehicle has been carried out in semi to completely self-ruling plants. In this climate, these robots capacities as materials transporter to convey items from one assembling spot to another where rail, transport furthermore, gantry arrangements are unrealistic. Aside from line following abilities, these robots ought to have capacity to explore intersections and settle on which intersection to turn and which intersection to disregard. To add on to intricacy of the issues sensor situating additionally assumes a part in improving the robots execution for errands referenced before."Roboticist" redirects here. It is not to be confused with Cyberneticist. Not to be confused with Cybernetics. Robotics is an interdisciplinary field that integrates computer science and engineering. Robotics involves design, construction, operation, and use of robots. The goal of robotics is to design machines that can help and assist humans. Robotics integrates fields of mechanical engineering, electrical engineering, information engineering, mechatronics, electronics, bioengineering, computer engineering, control engineering, software engineering, among others. Robotics develops machines that can substitute for humans and replicate human actions. Robots can be used in many situations and for many purposes, but today many are used in dangerous environments (including inspection of radioactive materials, bomb Department of CSE 2020-21 3 detection and deactivation), manufacturing processes, or where humans cannot survive (e.g. in space, underwater, in high heat, and clean up and containment of hazardous materials and radiation).

A Review Study Of Traffic Anomaly Intrusion Detection Using Artificial Intelligence

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Paper ID-109

ABSTRACT: In the new evolving world, traffic rule violations have become a central issue for majority of the developing countries. The numbers of vehicles are increasing rapidly as well as the numbers of traffic rule violations are increasing exponentially. Managing traffic rule violations has always been a tedious and compromising task. Even though the process of traffic management has become automated, it's a very challenging problem, due to the diversity of plate formats, different scales, rotations and non-uniform illumination conditions during image acquisition. The principal objective of this project is to control the traffic rule violations accurately and cost effectively. The proposed model includes an automated system which uses IR sensors and camera based on Raspberry PI to capture video. The project presents Automatic Number Plate Recognition (ANPR) techniques and other image manipulation techniques for plate localization and character recognition which makes it faster and easier to identify the number plates. After recognizing the vehicle number from number plate, the SMS based module is used to notify the vehicle owners about their traffic rule violation. An additional SMS is sent to Regional Transport Office (RTO) for tracking the report status.

KEYWORDS: Automatic Number Plate Recognition (ANPR), Artificial Neural Network, Image acquisition, CNN, Tesseract OCR, Canny Edge Detection.

I. INTRODUCTION

Automation in day to day life has gained importance in recent years. The number of accidents on the roads is due to the rule violations such as breaking traffic signals, over-speeding, driving on wrong sides etc. To avoid such traffic violations, traffic police has to be present on the road and has to continuously check if some vehicle is violating the rule. A certain automated solutions were developed to eliminate the violations; however each of them had certain limitations. For example, the video capturing cameras eliminated need of a authority to be present to check rule violation. However, whole stored video had to be checked manually for the rule violation scenario. In this proposed system, a solution for signal breaking violation is given .The system includes an automated system by using IR sensor, camera and number plate recognition application. In this system IR sensor will be placed near zebra crossing line. If any vehicle crosses the zebra line, the desktop application will be initiated and will capture number plate image. Number plate recognition application by using image processing algorithm will recognize number plate and SMS will be sent to the offender in case of rule violation scenario.

Solid In all the countries there are driving rules available for people to drive carefully by being honest and respecting. When these rules are broken it is defined as a road violation. There road violations that happens in day to day traffic. For an example most common violations such as red light violation, over-speeding, overtaking other vehicles through double white lines and single white lines. These road protocols are applied thoroughly for the places where most of the accidents happen. Research team have implemented an OpenCV and python based system upon a PC . This system is implemented to ease the work to the police using a user interface. Image processing technology is used to detect the lanes, vehicles and will identify vehicles who break rules. The team have implemented the system with the ultrasonic sensors in order to system to receive conditions to identify when a violation occur. It will be easier for the police to catch who break laws of the traffic and for the policemen who take bribes and dishonest people will also be reduced. An image of the violation with the location, time, date and an image of the vehicle to the nearest policemen devices by deriving devices around the current location that violation happened.

{This paper is structured as follows: Section II offers a thorough overview of the various violation systems introduced and algorithms used in various publications and research projects. Section III offers methodology, section IV offers experimental results and section V offers results. The conclusion and future work are presented in Section VI.}

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A Survey Work On Towards Exploring The Potential Of Alternative Quantum Computing Architectures

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Paper ID-127

ABSTRACT: The recent advances in the physical realization of Noisy Intermediate Scale Quantum (NISQ) computers have motivated research on design automation that allows users to execute quantum algorithms on them. Certain physical constraints in the architectures restrict how logical qubits used to describe the algorithm can be mapped to physical qubits used to realize the corresponding functionality. Thus far, this has been addressed by inserting additional operations in order to overcome the physical constrains. However, all these approaches have taken the existing architectures as invariant and did not explore the potential of changing the quantum architecture itself a valid option as long as the underlying physical constrains remain satisfied. In this work, we propose initial ideas to explore this potential. More precisely, we introduce several schemes for the generation of alternative coupling graphs (and, by this, quantum computing architectures) that still might be able to satisfy physical constraints but, at the same time, allow for a more efficient realization of the desired quantum functionality.

I. INTRODUCTION

Quantum computing received significant interests because of its ability to provide efficient solutions for certain complex tasks such as quantum chemistry, optimization, machine learning, cryptography, etc. Physicists experimented with various technologies such as ion-traps, superconductors, semiconductor quantum dots, or photonic systems in order to physically realize quantum computers. Among these, the superconducting technology is considered very promising since it provides better physical realizations over other candidate technologies. This motivated researchers as well as companies to focus on the development of actual quantum computers.
Herein, the approach from IBM stands out it provided the first publicly available quantum processors. These processors can be accessed by anyone through cloud access. This allows designers to run their own quantum algorithms (usually represented in terms of circuits) on the IBM quantum computers, known as IBM QX architectures. In order to execute quantum circuits on those architectures, the initial circuits have to be decomposed into elementary quantum operations that are supported by the given architecture. To this end, several solutions exist that decompose arbitrary quantum circuits into a sequence of elementary quantum gates.

Once the circuits are represented in a sequence of elementary quantum gates supported by the architecture, further design steps need to be conducted. This includes the mapping of logical qubits used in the originally given quantum circuit to the physical qubits used in the architecture. This, however, cannot be done in a one-to-one fashion, because IBM QX architectures have certain physical constraints described by so-called coupling graphs. Current state-of-the-art methods insert additional gates in order to re-arrange the qubits and/or to change the control/target connections so that the constraints imposed by the coupling graphs are satisfied. Obviously, the insertion of additional gates increases the size of the quantum circuit and, thus, reduces the fidelity of the circuit. As a result, researchers and engineers focused on developing solutions that aim to derive a proper mapping of logical qubits to physical qubits while, at the same time, keeping the number of additional gates as small as possible.

II. PROBLEM STATEMENT

Coupling graph representing the restrictions of the Rueschlikon (also known as IBM QX5) architecture. As can be seen, the architecture has 16 physical qubits represented by vertices with labels Q0 to Q15. Reducing the gate overhead caused by the need to satisfy the constraints from physical realizations obviously is the main objective of solutions introduced thus far for quantum circuit realization.

III. PROPOSED SYSTEM

We propose initial ideas towards exploring the potential sketched above. In fact, exploiting the shown potential in a naive fashion is easy. One just needs to generate alternative coupling graphs and map the respective quantum circuits to it in order to see whether this yields more efficient results as if, e.g., IBM's Rueschlikon is considered as coupling graph. However, exploring the potential using "arbitrary" coupling graphs is meaningless (in this case, a complete graph where all qubits may arbitrarily interact with each other will be the best but also physically most unrealistic solution). Hence, we consider alternative schemes for coupling graph generation that, on the one hand, allow exploring the possible potential

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Survey On De-Duplication Of Cloud Amalgamated Data Using Fuzzy Logic

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Paper ID-117

ABSTRACT: Data de-duplication has played a critical role in ensuring data quality for enterprise applications. Naturally, there has been extensive research in this area, and many data cleaning algorithms have been translated into tools to detect and to possibly de-duplicate in certain classes of duplication. Since different types of duplicates may coexist in the same data set, we often need to run more than one kind of algorithm or tools or methods. The paper investigates use of fuzzy duplicate records which is a fundamental part of the data cleaning process. The vagueness and uncertainty involved in detecting fuzzy duplicates make it a niche, for applying fuzzy reasoning. Although uncertainty algebras like fuzzy logic are known, their applicability to the problem of duplicate elimination has remained unexplored and unclear, until today. This paper investigates the different methods followed so far to remove the duplicates in the cloud computing world. The experimental findings on the removing duplicates detected by various algorithms are considered for review. The coverage of each method is well analyzed and the order in which multiple algorithms can be run also makes a big difference. The paper proposes to bring out the gap in existing methods as most of the methods are efficient for a specific set of data.

KEYWORDS: De-Duplication, Cloud, Fuzzy Sets, Constant Distance.

I. INTRODUCTION

A. Internet usage

Web clients have expanded significantly in the previous few years. An ever increasing number of individuals are coming on the web. It's anything but a significant piece of their day by day daily routine and associated with their social experiences. Additionally, in view of this COVID pandemic, the manner in which we connect with the web has essentially changed. We are utilizing innovation to do things we have never done. More prominent number of occupations, organizations, instructive foundations are taking advantage of innovation to complete the work even in such tough situations. The progressions it has brought are staying put, yet such headways in innovation additionally open it to some genuine security dangers which conveys digital intimidations one of the greatest worldwide dangers. In the previous few weeks of pandemic online dangers have ascended as much as multiple times. Assailants attempt to take or alter our information and can even assume responsibility for our frameworks. We have instances of worldwide scale assaults like ransom ware and a few assaults on the zoom stage. There has been gigantic development in utilization of PCs, data, online applications, versatile registering lately. This has come about into dramatic development of client base and their information across the globe. Always expanding information and extra room needed for putting away that information has become an excellent concern. Individuals convey their information to far off capacity because of restricted stockpiling limit, overhead and support and in this manner less monetary henceforth distributed computing turns out to be more famous. According to International Data Corporation (IDC Report, 2020) report, Global Data sphere is the blend of information produced, caught or imitated through the advanced substance from everywhere the world. IDC predicts that the Global Data sphere will develop from 33 Zettabytes (ZB) (1 ZB = 1021 Bytes or 270 Bytes) in 2018 to 175 ZB by 2025. In Fig. 1 by Internet Minute Info graphic (2020), we can envisioned the utilization of distributed storage of different cloud applications.

Fig. 1. Internet Minute pie chart (2018–2020)

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Deepfake Creation And Detection Using Cycle Gans

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Paper ID-106

ABSTRACT: The Creation and Detection of Deepfakes, Deep learning has been successfully applied to a variety of complex problems, ranging from big data analytics to computer vision and human-level control, using Cycle GANs. However, advances in deep learning have also been used to develop software that can cause threats to privacy, democracy, and national security. Deepfake is a popular technique based on artificial intelligence for image synthesis. As it can produce images without paired training data, it is more powerful than traditional image-to-image translation. Deepfake algorithms can create fake images and videos that humans cannot distinguish from authentic ones. The proposal of technologies that can automatically detect and assess the integrity of digital visual media is therefore indispensable. The most common form of deepfakes involves the generation and manipulation of human imagery. Generative deep learning algorithms have progressed to a point where it is difficult to tell the difference between what is real and what is fake. This technology has creative and productive applications. For example, realistic video dubbing of foreign films, education through the reanimation of historical figures, and virtually trying on clothes while shopping. There are also numerous online communities devoted to creating deepfake memes for entertainment, such as music videos portraying the face of actors.

KEYWORDS: Survey, Review, Deepfakes, Artificial Intelligence, Deep Learning, Computer Vision, Autoencoders, Forensics, GAN(Generative Adversarial Networks).

I. INTRODUCTION

A Deepfake refers to a specific kind of synthetic media where a person in an image or video is swapped with another person's likeness. The increasing sophistication of smartphone cameras and the availability of good internet connection all over the world has increased the ever-growing reach of social media and media sharing portals have made the creation and transmission of digital videos easier than ever before. The growing computational power has made deep learning so powerful that would have been thought impossible only a handful of years ago. Like any transformative technology, this has created new challenges. So-called "Deepfake" is produced by deep generative adversarial models that can manipulate video and audio clips. Spreading of the Deepfake over social media platforms has become very common leading to spamming and speculating wrong information over the platform. These types of Deepfake will be terrible, and lead to threatening, misleading common people. To overcome such a situation, Deepfake detection is very important. So, we describe a new deep learning-based method that can effectively distinguish AI-generated fake videos (Deepfake Videos) from real videos. It's incredibly important to develop technology that can spot fakes so that the Deepfake can be identified and prevented from spreading over the internet. The underlying mechanism for deepfake creation is deep learning models such as autoencoders and generative adversarial networks, which have been applied widely in the computer vision domain. These models are used to examine facial expressions and movements of a person and synthesize facial images of another person making analogous expressions and movements. Deepfake methods normally require a large amount of image and video data to train models to create photo-realistic images and videos. There is also a positive use of deepfakes such as creating voices of those who have lost theirs or updating episodes of movies without reshooting them. However, the number of malicious uses of deepfakes largely dominates that of the positive ones. The development of advanced deep networks and the availability of a large amount of data have made the forged images and videos almost indistinguishable to humans and even to sophisticated computer algorithms. This paper presents a survey of methods for creating as well as detecting deepfakes.

II. LITERATURE SURVEY

Deepfake video's explosive growth and illegal use are a major threat to democracy, justice, and public trust. As a result, there is an increased demand for fake video analysis, detection, and intervention. Some of the related words in deep fake detection are listed below:

ExposingDF Videos by Detecting Face Warping Artifacts [1] used an approach to detects artifacts by comparing the generated face areas and their surrounding regions with a dedicated Convolutional Neural Network model. In this work, there were two-fold Face Artifacts.

Their method is based on the observations that the current DF algorithm can only generate images of limited resolutions, which are then needed to be further transformed to match the faces to be replaced in the source video.

Exposing AI Created Fake Videos by Detecting Eye Blinking [2] describes a new method to expose fake face videos generated with deep neural network models. The method is based on the detection of eye blinking in the videos, which is a

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Speech Recognition Using CNNART

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Paper ID-122

Abstract: Increasingly people are trying to conduct their online activities in a more voice based manner as listening and speaking come naturally as modes of communication and gathering information. Because of this, many are now heading to more voice based web browsing rather than using text only. The results of a case study that was conducted while developing an automatic speech recognition system for web browsing are presented in this work. A generalized coding technique is used to adapt the system to new samples without having to change the code. A generalized coding is done to make the system compatible for n' number of samples without any change in basic coding. Speech data is collected from independent speakers and pre-processed to extract the features needed in this research. Feature extraction is carried out using Mel Frequency Cestrum Coefficient (MFCC) technique. In [1], it was demonstrated that MFCC outperforms than other feature extraction techniques. After the training session, the acoustic vectors extracted from input speech of a speaker provide a set of training vectors. The centroid based neural network Adaptive Resonance Theory (CNNART) approach is used for mapping vectors from a large vector space to a finite number of regions in that space. For comparison purpose, the distance between each test codeword and each codeword in the master codebook is computed. The difference is used to make recognition decision. The prototype can recognize the word as well as sentences by concatenating the words stored in the database to form a sentence. The recognition accuracy of the system is 85% in speaker dependent environment while 70% in speaker independent environment. Also, system provides 70% accuracy for sentence recognition while for isolated word, recognition accuracy is 80%.

Keywords: Speech quality, Voice conversion, Speech synthesis

I.INTRODUCTION

Speech is a natural mode of communication for people. Human beings learn all the relevant skills during early childhood, without instruction, and continue to rely on speech communication throughout lives. It comes so naturally that they don't realize how complex a phenomenon speech is. Yet people are so comfortable with speech that they would also like to interact with computers via speech for applications such as web browsing, language translation rather than having to resort to primitive interfaces such as keyboards and pointing devices. One of the major challenges with existing browsers is to provide a simple navigation framework that demands user-friendly interaction. For people who usually use computer may face with bad healthy syndrome called Carpal-Tunnel Syndrome. Carpal-Tunnel Syndrome is an uncomfortable feeling on body especially on hand and fingers after doing any particular job or activity repeatedly. So, by implementing speech in using computer became more efficient rather than just using keyboard and mouse alone. By combining these tools, accessing activities became more efficient. Browsers with Speech capability provide simple and effective user interaction, which can be rightly called as hands-free browsers. The ultimate goal is to ease the user interactivity with browser while surfing the net. Here the user instead of traversing the web pages by clicking on hyperlinks, he/she reads out the hyperlink and the corresponding page automatically gets loaded.

II.SPEECH RECOGNITION MODULE

The General scheme for Speech Recognition is shown in Figure 1. Test and reference patterns (feature vectors) are extracted from speech utterances statistically or dynamically. At the training stage, reference models are generated (or trained) from the reference patterns by various methods. A reference model (or template) is formed by obtaining the statistical parameters from the reference speech data. A test pattern is compared against the reference templates at the feature matching stage. The comparison may be conducted by probability density estimation or by distance measure. After comparison, the test pattern is labelled to a speech model at the decision stage. Different stages are explained as follows.

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A Study On Price Prediction Of Bitcoin Using Deep Learning

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Paper ID-150

Abstract: The development of cryptocurrencies has result in fast increase in their usage. The high fluctuation of those currencies is that the motivation to analyse and predict their price within the market. Cryptocurrencies are a digital approach of money within which all transactions are held electronically. it's a soft currency that doesn't exist within the variety of form of notes physically. Here, we are emphasizing the distinction of fiat currency that is decentralized that with none third-party intervention all virtual currency users will get the services. However, obtaining services of those cryptocurrencies impacts on international relations and trade, because of its high price volatility. There are many virtual currencies like bitcoin, ripple, ethereum, ethereum classic, doge coin, binance coin, etc. In our study, we particularly targeted on a popular cryptocurrency, i.e., bitcoin. From many types of virtual currencies, bitcoin contains a nice acceptance by totally different bodies like investors, researchers, traders, and policy-makers. To the most effective of our information, our target is to implement the efficient deep learning-based prediction models specifically long short-term memory (LSTM) and gated recurrent unit (GRU) to handle the value volatility of bitcoin and to get high accuracy. Our study involves comparison these 2 time series deep learning techniques and verified the effectivity in prediction the value of bitcoin.

Keywords : Crypto Curreny, Bitcoin, RNN, LSTM, GRU

1. INTRODUCTION

Virtual currencies are a kind of cryptocurrency that is a powerful technical achievement in digital marketing, nevertheless. Virtual currencies go on, and that they couldn'tfully replace order or standard currencies. within the current study, we are trying to indicate a motivating new perspective from that read of economics queries surrounding currency governance, the characteristics of money, political economy of financial intermediaries, and also the nature of currency computation.

Virtual currencies become the foremost favorable and used for business enterprise transactions everywhere the world [1, 2]. the recognition is due to its innovative characteristics like transparency, simplicity, and increasing acceptance through the world [3]. within the current time, bitcoin is that the popular flourishing virtual currency. reported to the web site https://bitcoin.org, viewed on April 01, 2021, the virtual currency value is about to 500 billions of dollars, however it varies from time to time. Bitcoin may be a peer-to-peer cryptocurrency within which all transactions don't seem to be regulated or controlled by any third party. Third-party intervention between customers is not possible. it's extremely volatile value operating 24/7. capitalisation of bitcoin is increased through time to time. within the current time, over five hundred billions of dollars publically traded. due to its open-source nature, clear, transparent, simple, and time is saving that leads all virtual currencies within the world. Bitcoin is a worldwide and most well liked cryptocurrency, initial introduced in 2008 and exploited as open source in 2009 by a person known as Satoshi Nakamoto, however it became extremely well-liked in 2017. Bitcoin functions as a decentralized moderate of electronic cash, with transactions well-tried and transcribed in a public distributed ledger (blockchain) without any third-party intervention. Transaction blocks contains secure shell rule that is used to connect one another, and blocks are

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Forecasting on Crime Analysis and Prediction using Machine Learning

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Paper ID-154

Abstract- Crime is one of the biggest and dominating problem in our society and its prevention is an important task. Daily there are huge numbers of crimes committed. It is required to keep track of all the crimes and maintain a database which may be used for future reference. The current problem we face are maintaining of proper dataset of crime and analyzing this data to help in predicting and solving crimes in future. Our task is to predict which category of crime is most likely to occur at what place and what time. The objective of this project is to analyze dataset which consist of numerous crimes and predicting the type of crime which may happen in future depending upon various conditions. In this project, we will be using the technique of machine learning and data science for crime prediction. In our project, we analyze crime data from the city of Vancouver. It consists of crime information like location description, type of crime, date, time, latitude, longitude. The Random Forest algorithm and various other algorithms will be tested for crime prediction and one with better accuracy will be used for training. The objective of this project is to give an idea of how machine learning and analysis of crime can be used by the law enforcement agencies to detect, predict and solve crimes at a much faster rate and thus reduces the crime rate.

Keywords: Crime prediction, Machine learning, analysis, Support Vector Machine (SVM), One nearest neighbor (1NN), Naïve Baise.

I. INTRODUCTION

Crime, in a way, influences organizations and institutions when occurred frequently in a society. Thus, it is necessary to study the factors and relations between different crimes and to find a way to accurately predict and avoid these crimes. Recently law enforcement agencies have been moving towards a more empirical, data driven approach to predictive policing. However, even with new data-driven approaches to predict crime, the fundamental job of crime analysts still remains difficult and often manual, specific patterns of crime are not very easy to find by way of automated tools, whereas larger-scale density-based trends comprised mainly of background crime levels are much easier for data-driven approaches and software to estimate. Here we will take an interdisciplinary approach between computer science and criminal justice to develop a Machine learning paradigm that can help solve crimes faster. More specifically, Crime is naturally unpredictable. It is not necessarily random; neither does it take place persistently in space or time. A Good theoretical understanding is needed to provide practical crime revention solutions that equivalent to specific places and times. Crime analysis takes past crime data to predict future crime locations and time. Crime prediction for future crime is a process that finds out crime rate change from one year to the next and projects those changes into the future.

II. RELATED WORK

Crime prediction is done on data set in which various machine learning models are used. Comparison of models like KNN, Naïve Bayes, and SVM is done this paper. It is seen that prediction varies depending upon the dataset and features that have been selected. The prediction accuracy found in is 78% for KNN, 64% for GaussianNB, 31% for SVC. Auto regressive integrated Moving average models was used to make machine learning algorithms to forecast crime trends in urban areas. One of the major problems in crimes is detecting and analyzing the pattern of crimes. Understanding datasets is also an important concept in this case. We

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Survey On Detecting COVID-19 Using Chest X-Ray Images On Deep Learning

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Paper ID-123

ABSTRACT: Chest X-ray (CXR) imaging is a widespread and essential examination approach used for suspected Cases of coronavirus disease (COVID-19). In profoundly affected or limited resource regions, CXR imaging is preferable as a result of its availability, low fee, and rapid results. However, given the unexpectedly spreading nature of COVID-19, such tests may want to restriction the efficiency of pandemic control and prevention. In response to this difficulty, artificial intelligence methods such as deep learning are promising options for computerized analysis due to the fact they have achieved state-of-the-art performance within the evaluation of visible facts and an extensive range of scientific photographs. A medical look at of COVID-19 inflamed patients has proven that these styles of patients are by and large inflamed from a lung contamination after coming in touch with this disease. Chest x-ray (i.e., radiography) and chest CT are an extra powerful imaging method for diagnosing lung related problems. Still, a huge chest x-ray is a decrease fee method in evaluation to chest CT. Deep learning is the maximum a success technique of machine learning, which gives useful analysis to take a look at a big amount of chest x-ray images that may critically impact on screening of Covid-19. In this work, we've got taken the PA view of chest x-ray scans for COVID-19 affected sufferers as well as healthy patients. After cleaning up the pics and making use of statistics augmentation, we have used deep learning to know primarily based CNN model.

KEYWORDS: Chest X-ray, Deep Learning, COVID-19, Corona Virus, Radiological Imaging, Bacterial Pneumonia, Viral Pneumonia

I. INTRODUCTION

Early prognosis of the coronavirus disease (COVID-19) is vital to lessen the spread of the virus and offer take care of preventing complications. The daily increments in COVID-19 cases worldwide and the limitations of the current diagnostic equipment impose challenges in identifying and handling the pandemic. Researchers worldwide are actively collaborating to discover powerful diagnostic processes and accelerate the improvement of a vaccine and treatments. As of the writing of this paper, 3 diagnostic methods are typically used: blood tests, viral assessments, and scientific imaging. Blood tests detect the presence of excessive acute respiratory syndrome coronavirus 2 (SARS-CoV-2) antibodies in the blood. Viral checks locate the antigens of SARS-CoV-2 the usage of samples from the respiratory tract. The fast diagnostic test (RDT) is a kind of antibody detection take a look at that is fast and may produce consequences in 30 min. However, the provision of RDT test kits is restrained, and its effectiveness relies upon at the sample high-quality and the time of onset of contamination. Furthermore, the take a look at can yield fake positive outcomes because it does now not distinguish COVID-19 from other viral infections; therefore, it isn't encouraged for diagnosing COVID-19. Another normally used viral test is opposite transcription polymerase chain response (RT-PCR). RT-PCR is the gold-trendy device used because the first-line display screening desire. However, big-scale studies have located that the check result sensitivity ranges between 50–62%. This implies that an initial bad RT-PCR result can be obtained. Therefore, to ensure the correctness of the take a look at end result for diagnosis, more than one RT-PCR checks are finished over a 14-day remark duration. In other phrases, an RT-PCR negative end result for a suspected case of COVID-19 is handiest considered as a proper negative whilst there are no fine RT-PCR outcomes after multiple tests have been taken over the 14-day statement duration. This can be frustrating for the affected person and costly for the healthcare government owing to the shortage of RT-PCR test kits in several international locations.

Because COVID-19 goals the respiration system, chest radiology scans are critical device for analysis and early control. Chest X-rays (CXR) have been used as a first-line diagnostic tool in various countries. The circumstance of the lungs may be efficiently detected the use of radiology scans along with the exceptional degrees of contamination or recuperation. Radiologists have recorded a selection of abnormalities discovered in the radiology scans of COVID-19 sufferers. CXR is an extensively available tool in maximum clinical settings; it is less time-eating in terms of affected person practise and instantaneous diagnosis. Consequently, CXR may be used for patient triage, figuring out the priority of patient treatments, and making use of clinical resources

In the medical imaging area, deep getting to know (DL) techniques have been used to improve the performance of picture evaluation extensively. For example, DL has been efficiently applied to microscopy pictures, brain tumor category, MRI pictures, and retinal snap shots.

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Convulsion Identification Using Electromyography Signals

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Paper ID-120

ABSTRACT: Epilepsy is a chronic neurological issue with a few distinct sorts of seizures, some of them portrayed by compulsory repetitive spasms, which incredibly affect the regular day to day existence of the patients. A few arrangements have been proposed in the writing to distinguish this sort of seizures and to screen the patient; be that as it may, these methodologies need ergonomic issues and in the appropriate combination with the wellbeing framework. This examination makes an inside and out investigation of the principle factors that an epileptic recognition and observing apparatus ought to achieve. Besides, we present the design for explicit epilepsy location and observing stage, satisfying these variables. Extraordinary consideration has been given to the piece of the framework the patient should wear, giving subtleties of this piece of the stage. At last, a fractional execution has been conveyed and a few tests have been proposed and done to settle on some plan choices.

I. INTRODUCTION

Epilepsy is a chronic neurological disorder characterized by involuntary recurrent convulsions. There are around 65 million individuals influenced from one side of the planet to the other, with a high and sensational effect on the patient's personal satisfaction, yet in addition on the expert turn of events and social conduct, the wellbeing framework spending plan is profoundly influenced also. Primary part of the anamnesis interaction is the place where the information is assembled. The fundamental piece of the writing manages compelled spaces, that is, research labs or clinic rooms, or even the patient's home, however without thinking about the ordinary regular daily existence. We claim that the information ought to be assembled in regular daily existence, permitting the patient to unreservedly choose what to do and how to do it This is important because firstly, the data is gathered from normal activities performed before and after a seizure, and secondly, the analysis and procedures should adapt to this unconstrained world, making the whole detection process much more difficult. A careful in- depth analysis of the seminal papers concerning epilepsy monitoring platforms and Mobile Cloud Computing (MCC) let us conclude that the current available platform, either in the scientific literature or in the market, lacks several main features that are not comprehensibly integrated. This investigation means to address a portion of these restrictions; to do as such, an answer is proposed and an experimentation stage has been acted to remove the reasonable ends for the epilepsy checking stages. In the following area, the most applicable commitments in the writing are broke down and censured, giving extraordinary consideration to the distributed stages; the principle worries that stay inexplicable are incorporated too.

Epilepsy is a gathering of neurological illnesses portrayed by epileptic seizures that influences over 10% of the human populace worldwide and brought about 116,000 Sudden Unexpected Death in Epilepsy (SUDEP) over the most recent two years, particularly engine vehicle mishaps. In created nations, babies represent the greater part of the seizures. Around 5-10% of individuals more than 80 years of age have had a seizure. The current seizure discovery arrangements depend on manual examination, and the interest for robotized recognition is high, also the requirement for expectation. Utilizing on the web unaided Brain Computer Interface (BCI), location and observing the arrangement can at any rate help in distinguishing the seizure indications ahead of schedule to keep away from deadly results. In any case, the constraints in the recognition time are a test.

The current seizure discovery arrangements depend on manual examination, and the interest for robotized recognition is high, also the requirement for expectation. Utilizing on the web unaided Brain Computer Interface (BCI), location and observing the arrangement can at any rate help in distinguishing the seizure indications ahead of schedule to keep away from deadly results. In any case, the constraints in the recognition time are a test.

The present status of-the-craftsmanship structures either require an ideal climate to work, inclined to commotion, have limits with expectations, or require an amazing computational force just as a ton of wiring on the patients, and in a large portion of the cases, they don't give a shut circle forecast and identification frameworks nor simple specialist admittance to choices instruments, which can cost the patient's life. In this investigation, we propose an early indicator of epileptic seizures that is based on artificial immune systems (AIS).

The framework utilized a dispensable wearable non-obtrusive sensors set on a headband that speaks with an advanced mobile phone or any ICU observing gadget through a Bluetooth (BT) association innovation.

The proposed framework of our system utilizes negligibly a non intrusive wearable EEG, with a sign handling chip joined to it, which is set behind the patient's ear and associates through a BT to an outside checking gadget, or to an ICU staff or specialist's shrewd handheld gadget

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Screening System For Early Detection Of Diabetic Retinopathy

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Paper ID-137

ABSTRACT: In today's world, Diabetes is a very common disease which affects a lot of people's health. As the number of diabetic patients is increasing significantly in India, there is a rise in numerous associated diseases that have disturbed the society. Diabetic Retinopathy (DR) is considered to be one of such silent diseases which occur as a result of either Type 1 or Type 2 diabetes. Late diagnosis of this disease may lead to permanent eye blindness. Thus, for early diagnosis of Diabetic Retinopathy, a software-based algorithm is designed here. This technique can be promising for the pre-detection of DR without any involvement of an expert doctor and hence will save both time and money. Here, CNN based image processing is used which exploits the knowledge of Computer Science and Biomedical Engineering to identify whitish lesions, cotton wool spots and hard exudates associated with DR. Based on the value of pixel counts, the image of the patient's eye under examination is classified as a Diabetic Retinopathic eye or a Non-Diabetic Retinopathic eye.

KEYWORDS: Deep learning, convolutional neural network, Diabetic retinopathy.

I. INTRODUCTION

Based on the level of production of insulin, there are two types of diabetes i.E. Type 1 and type 2 which can be tested by fasting plasma glucose (FPG) test or the A1C (hemoglobin a1c) test. A significant portion of people having type 1 and type 2 diabetes suffer from a silent eye blindness disease known as diabetic retinopathy. In this disease, the blood vessels of the eyes might be damaged due to high blood sugar leve. Since vision is gradually reduced in most cases, early diagnosis of diabetes can increase the chance of preventing blindness and blurred vision. Here, CNN based image processing is used. The convolution neural network (CNN) is a class of deep learning neural networks. CNN's represent a huge breakthrough in image recognition. A Convolutional neural network (CNN) is a neural network that has one or more convolutional layers and are used mainly for image processing, classification, segmentation and also for other auto correlated data. They are most commonly used to analyse visual imagery and are frequent working behind the scenes in image classification.

II. RELATED WORK

There are already several algorithms for the detection of diabetic retinopathy using Support Vector Machine, Conventional Neural Network and Digital Image Processing. But efficacy of those techniques is questionable and is moreover complex in nature. Therefore, in this manuscript, the main aim is to build an application by which the brighter spots which occurs in the eye retina caused by Diabetic Retinopathy can be detected. These spots are basically the hard exudates, cotton wool spots and whitish lesions. Here, colored fundus images are used for processing. Based on the pixel count of the image, the image is identified as a Diabetic Retinopathic eye image or not.

Different researchers have proposed various methods to predict the Diabetes disease in the patients using their health/personal data.

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Survey on Early Detection of Diabetic Retinopathy

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Paper ID-141

ABSTRACT: Visual perception is very important for human life. Although several medical conditions can cause retinal disease, the most common cause is diabetes. Diabetic Retinopathy (DR) can be identified using retinal fundus images. Detection and classification of deformation in Diabetic retinopathy is a challenging task since it is symptomless. Several algorithms were analyzed for the identification of abnormality. The analysis of different models in detecting the abnormalities from the image is done which includes various preprocessing techniques to standardize the image and post-processing techniques are applied for morphological adjustments, segmentation algorithms for segmenting the Lesion of Interest(LOI) namely white lesions and red lesions, further feature extraction methods extracts the features like Micro Aneurysms, Hemorrhages, Exudates and Cotton Wool Spots and so on finally, classification methods were utilized which concludes the presence or absence of DR symptoms along with the severity based on the count of the features extracted in the given retinal image. This survey study aims to develop a novel algorithm to identify and detect types of above mentioned diseases and find out the severity of those diseases also examine with 100% accuracy.

KEYWORDS: Diabetic Retinopathy; Micro Aneurysms; Hemorrhages; Exudates; Cotton Wool Spots; Lesion of Interest.

I. INTRODUCTION

According to WHO, in the year 2000, Diabetes Mellitus (DM) has affected over about 31.7 million people in India and this statistics is estimated to rise up to 79.4 million by 2030. Most of the population of the world in their working age might suffer from diabetes which is caused by aging and growth, physical inactivity and increase in obesity level. Based on the level of production of insulin, there are two types of Diabetes i.e. Type 1 and Type 2 which can be tested by fasting plasma glucose (FPG) test or the A1C (Hemoglobin A1c) test. Diabetic Retinopathy (DR) is a general term used to express vascular problems in the retina of the diabetic patients. A significant portion of people having Type 1 and Type 2 diabetes suffer from a silent eye blindness disease known as Diabetic Retinopathy. In this disease, the blood vessels of the eyes might be damaged due to high blood sugar level. Since vision is gradually reduced in most cases, early diagnosis of diabetes can increase the chance of preventing blindness and blurred vision. Here, CNN based image processing is used. The convolution neural network (CNN) is a class of deep learning neural networks. CNN's represent a huge breakthrough in image recognition. They are most commonly used to analyse visual imagery and are frequent working behind the scenes in image classification. A Convolutional neural network (CNN) is a neural network that has one or more convolutional layers and is used mainly for image processing, classification, segmentation and also for other auto correlated data.

II. LITERARY REVIEW

Muhammad Mateen, Junhao Wen , Nasrullah Nasrullah,Song Sun, and Shaukat Hayat (2020) published paper titled "Exudate Detection for Diabetic Retinopathy Using Pretrained Convolutional Neural Networks"
has proposed framework, three well-reputed pre-trained network architectures are combined together to perform feature fusion, as different architectures can capture different features. The outcomes are a pre-trained convolutional neural network- (CNN-) based framework is proposed for the detection of retinal exudates in fundus images using transfer learning.
Sugasri.M, Vibitha.V, Paveshkumar.M, Sree sanjanaa Bose.S (2020) published paper titled "Screening System for Early Detection of Diabetic Retinopathy" has proposed Image VKRZV following method of applying image processing which includes image acquisition, pre-processing like filtering(Median/Wiener/Gaussian), contrast enhancement and outcomes are the finding of optic disc is made by means of skin locus techniques, blood

Tomato Leaf Diseases Detection UsingConvolutional Neural Networks

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Paper ID-135

ABSTRACT: Smart farming system is an innovative technology that helps improve the quality and quantity of agricultural production in the country. Plant leaf disease has been one of the major threats to food security since long ago because it reduces the crop yield and compromises its quality. diagnosis of accurate diseases has been a major challenge and the recent advances in computer vision made possible by deep learning has paved the way for camera- assisted disease diagnosis for plant leaf. It described the innovative solution that provides efficient disease detection and deep learning with convolutional neural networks (CNNs) has achieved great success in the classification of various plant leaf diseases. A variety of neuron-wise and layer-wise visualization methods were applied and trained using a CNN, with a publicly available plant disease given image dataset. So, it observed that neural networks can capture the colors and textures of lesions specific to respective diseases upon diagnosis, which can act like human decision-making.

Keywords: Disease detection, Deep learning, Tensorflow.

I. INTRODUCTION

Deep learning is a branch of machine learning which is completely based on artificial neural networks, deep learning is also a kind of mimic of human brain because the neural network can mimic the human brain. It's on hype nowadays because earlier we had lot of data and not enough processing power. A formal definition of deep learning is- neurons Deep learning is a particular kind of machine learning that achieves great power and flexibility by learningto represent the world as a nested hierarchy of concepts, with each concept defined in relation to simpler concepts, and more abstract representations computed in terms of less abstract ones. In human brain approximately there are 100 billion neurons, all together this is a picture of an individual neuron and each neuron is connected through thousandsof their neighbours. So, it creates an artificial structure called an artificial neural net where we have nodes or neurons.

II. LITERATURE SURVEY

A. Chowdhury, Dhruba K. Bhattacharyya, Jugal K. Kalita propose an Co-Expression Analysis of Gene Expression: A Survey of Best Practices. It presented an overview of best practices in the analysis of (differential) co-expression, coexpression networks, differential networking, and differential connectivity that can be discovered in microarrays and RNA-seq data, and shed some light on the analysis of scRNA-seq data as well.

XiaoyanGuo, MingZhang, Yongqiang Dai proposed Image of pant disease segmentation model based on pulse coupled neural Network with shuffle frog leap algorithm. A novel image segmentation model SFLA-PCNN for plant diseases based on hybrid frog-hopping algorithm is proposed. Using the weighted sum of cross entropy and image segmentation compactness as the fitness function of SFLA, the image of potato late blight disease is taken as a trial segmentation image to find the optimal configuration parameters of PCNN neural. Image segmentation is a key step in feature extraction and disease recognition of plant diseases images.

Chit Su Hlaing, SaiMaungMaungZaw proposed Plant Diseases Recognition for Smart Farming Using bModel- based Statistical Features. Ithas shown the advantages of GP distribution model for SIFT descriptor and successfully applied in plant disease classification. Furthermore, it proposed feature achieves a good tradeoff between performance and classification accuracy. Although it proposed feature can successfully model the SIFT feature and applied in plant diseases recognition, it need to try to improve our proposed feature by considering and cooperation with other image processing methods.

III.EXISTING SYSTEM

Plants are considered as energy supply to mankind. Plant diseases can affect the agriculture which can be resultedin to huge loss on the crop yield. Therefore, leaf from various areas, and classifies it into one of the predefined setof classes. The features and properties like color, intensity and dimensions of the plant leaves are considered as a major fact for classification and the various types of plant diseases and different classification techniques in machine learning that are used for identifying diseases in different plants leaf.

IV.PROPOSED SYSTEM

A Writing Overview On Magnificent Mirror

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Paper ID-102

ABSTRACT: This task depicts the plan and advancement of a cutting edge reflect that offers rearranged and adaptable administrations to the home climate. The mirror interface gives clients the flexibility required for better administration and incorporation of day by day errands. On a standard with there penny progresses in the Internet of Things guidelines and applications, the mirror is intended to empower inhabitants to control the family brilliant machines and access customized administrations.The target of building a Smart mirror is to help save time by aiding individuals empowering them to refresh with highlights like Daily News, Weather Forecast, Mail notices, Phone Network and some more. The objective is to foster a savvy astute mirror that do considerably more than a normal mirror and its reasonable for home and business needs and has an expansive application prospect.

KEYWORDS: Raspberry Pi, Internet of Things, Smart Mirror, face Recognition,Voice Recognition.

I. INTRODUCTION

These days, IoT is the significant idea with respect to every one of the gadgets and activities. The utilization of web can be seen all over the place. It is assessed that constantly 2020,there will be up to 21 billion gadgets across the globe associated with 'Web of Things' methods each man can convey 7-8 IoT gadgets which will be persistently associated with the Internet. Our way of life is totally associated with the Internet at the end of the day Internet has become the fundamental need of human existence. The development of IoT will bring about collection of uncommon information which should be prepared and examined. Web of Things offers boundless freedoms to upgrade correspondence among gadgets and information sharing yet this equivalent element makes it profoundly helpless according to the perspective of safety.

It's anything but a divider mounted mirror it shows data like news, climate, schedule and different things identified with our necessities. A shared objective for building a keen mirror is to utilize a top notch single direction glass, a LCD screen, an edge to hold the glass and screen, and a movement sensor to identify an individual and an internet browser called streak with python to give the product highlights like 'Alexa' and drive the presentation further. This paper will examine about the plan of savvy reflect. Shrewd mirror accompanies Amazon ALEXA application which is a voice administration that reacts to our inquiries. The savvy reflect is likewise ready to perform face acknowledgment utilizing pi camera.

II. RELATED WORK

The Proposed Intelligent Mirror framework works in two modes.

A. Stanalone Mode When client isn't before reflect, it's anything but a customary mirror. This otherwise called Power Saving Mode as in this mode all hardware circuits are in OFF state.

B. OnlineMode This mode actuated when client come before mirror and it show all pertinent data to client. In online mode, raspberry pi module gets associated with web and show all client required information. Square level framework outline is displayed in fig 1. Equipment and Software for plan of framework are referenced underneath.

Hardware Requirements:
a)Camera – REES52 Raspberry Pi 3 model B+ steady 5MP camera.
b)Two way Glass reflect - 18 x 24 x 0.2 crawls by keen mirror unit.
c)Infrared Module – 38 KHz Geekworm IR Control Kit.
d)Raspberry Pi 3 module B+.
e)Microphone and speaker
f)Display Unit
g)Temperature Sensor
i)Humidity Sensor

Software and Computer Language Requirements:
a)HTTP
b)PHP

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Virtual Picture Utilizing Using Raspberry PI3

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Paper ID-103

ABSTRACT: At the present time, people can access information at a glance through laptops, mobile phones, desktop and more but some extra interaction is required to access the information. As technology is growing its being easier to access information, in past information was available through paper, then through computers, and now it can be access through smart phones and other devices. The motive of this paper is to provide more information to user without making more effort to get it, Here the idea of Smart Mirror originated, Modern appliances require input through keyboard or touch screen interface which require little effort to access information but this interactive mirror allows user to access data quickly and comfortably through voice and other devices. The smart mirror consists of peripheral such as LED monitor, camera, LED lights, speakers, microphone, covered with one-way mirror. This interactive mirror provides some basic amenities on default screen such as time, news updates and weather, and also perform some advance functions such as monitoring system direct to smart phones, also includes all feature of smartphone.

KEYWORDS: **Mirror, Raspberry, Sensor, Camera, IOT**

1. INTRODUCTION

Everyone knows what a mirror is. It is an object found in most people's homes. In mirrors we see our reflections. But what happens when you combine the idea of a mirror with technology? What possibilities are there and how smart could a mirror be? These are some of the questions that inspired my choice of final year project, a project which aimed to develop a smart mirror and a small operating system to power it. The device was to go beyond an ordinary mirror, to have a screen inside that you would be able to interact with by using voice commands, and smart phones or other devices. Presentation and punctuality are two of the most valued qualities in modern society. However, it can be difficult to effectively prepare for the day while remaining knowledgeable about current affairs and still maintain a timely schedule. In the morning, it is imperative to prepare for the day in front of a mirror, which is often a slow process. Additionally, factors such as the current weather conditions can influence how a person prepares for the day. Finding an efficient way to check all the factors that can affect how a person prepares for the day while also not adversely affecting the tasks that are performed in front of a mirror can be a challenge. The goal of our project was to create a product that will provide quick and easy access to the time, news, and weather while simultaneously allowing a person to go through their morning routine. Our product should enhance productivity while providing a functional and enjoyable user experience.

2. RELATED WORK

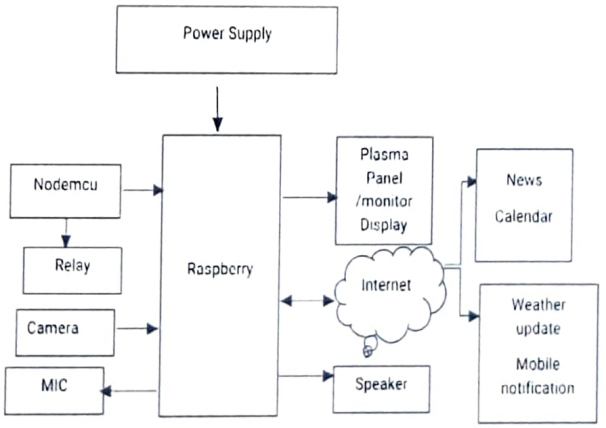

Fig: Block diagram of smart mirror

Automated Ultrasonic Disinfectant Rover To Maintain Hygiene Environment Using Iot

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Paper ID-132

Abstract:- The world is going through a major health crisis due to covid-19. This project is for regular sanitationof places without much involvement of humans to reduce infectection rates. Project is based on Arduino and bluetooth with robotics using ultrasonic proximity sensors.In order to reduce the possibility of spread of virus regular sanitation is required which can be blundering for humans as higher risk of infection whereas the machines are not affected. This rover can play an important life saver role. The current global challenge of the pandemic caused by the novel severe contagious respiratory syndrome covid-19 presents the greatest global public health crisis. It is a big challenge for human workers keeping in mind the vulnerability to covid-19. Due to limits on the human working capacity, especially a limit on the human workforce, is one of the advantages in adopting such robotic approaches. We have applied different safety measurements as it avoids sanitation on the surfaces with higher temperature than the sanitation solution's burning point to prevent fire. At the time of sanitation it automatically detects the object to sanitise. It will work continuously until refilling is needed again. As compared with physical interaction the new system is an easier way to manage the whole sanitation process in a safest manner.

Keywords: IoT, Ultrasonic, Sensor, Actuators, IDE, nRFtoolbox, UART.

I. INTRODUCTION

The Internet of things (IoT) describes the network of physical objects "things"-that are embedded with sensors, software, and other technologies for the purpose of connecting and exchanging data with other devices and systems over the Internet. The primary drive for automation IoT is to significantly reduce operating expenditures when automation devices, sensors and actuators become Internet-enabled devices The Internet of Things (IoT) has drawn convincing research ground in several sectors especially in healthcare.

[1] IoT is evolving healthcare systems from conventional to more personalized healthcare systems through which patients can be diagnosed, treated, and monitored more easily.[2] IoT devices tagged with sensors are used for tracking real time location of medical equipment like wheelchairs, defibrillators, nebulizers, oxygen pumps and other monitoring equipment.

[3] In a global pandemic like COVID-19 IoT can play an immense role in saving human lives. This project is for regular sanitation of places without much involvement of humans to reduce infectection rates.

II. SCOPE

The IoT integrated robotic product produced is an application by name "Automated Ultrasonic Disinfectant Rover to Maintain Hygiene Environment using IoT". According to the World Health Organization(WHO) over 3 million people died due to COVID-19 infection and around 181 million people got infected. COVID-19 virus is a mutated virus in which the mutation and evolution rate has increased exponentially as it can mutate within 15 days to new form.By the time latest variant Delta and DeltaPlus is found to be 50 times more infectious than the original COVID-19 Sarc virus, the maintenance of hygiene environment is the most important thing to reduce the mortality rate in long period as it can last several years.

In the first stage, the rover is developed for the indoor sanitation process. It can go through all the hurdles with the help of controlling commands and found feasible for the highly precise sanitation process as testing practice, It successfully identified the objects to be sanitised and found the way without collision. In the larger perspective it can be deployed in public places where large numbers of people gather. Public places like bus Stands, railway stations, hospitals, airports and institutions like schools and colleges will be highly benefited with this rover.

However, a limit on the human working capacity,especially a limit on the human workforce, is one of the advantages in adopting such robotic approaches. We have applied different safety measurements as it avoids sanitation on the surfaces with higher temperature than the sanitation solution's burning point to avoid fire casualties.

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Role Of Blockchain In Finance And Accounting

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Paper ID-128

ABSTRACT: A blockchain, is a growing list of information, called blocks, which are linked using cryptography. A blockchain is a decentralized, distributed and a public digital ledger that is used to record transactions across many devices so that any involved record cannot be changed easily, without modifying all subsequent blocks, because of this, blockchain has found its use in wide-ranging fields. This review paper, therefore, describes the role of blockchain in IoT and financial applications, two fields which will be benefitted the most by it. Furthermore, this paper examines the privacy and security concerns related to it and shares some insights on how these problems can be tackled. In this paper, we have reviewed multiple such papers in which similar issues were addressed. Lastly, the public perception of blockchain technology is taken to addresses how blockchain is perceived in different segments of society.

KEYWORDS: Energy *Blockchain, Security, Privacy, Finance, IoT.*

I. INTRODUCTION

Since the establishment of bitcoin in 2009, one thing that has raised hopes of many is the technology running under the hood, Blockchain. 9 years on and blockchain has made its way into an array of other technologies with Financial and IOT being at the forefront of this development.The blockchain is a distributed ledger which helps in facilitating and verifying transactions between mutually distrusted parties without the need of central authority. Ethereum, the world's largest Blockchain has a market cap of21 Billion $ and 333.1 million confirmed transactions [1] (Asof writing this paper). Furthermore, it has more than 4.5 million unique addresses [2] (As of Writing this paper). With69 % of banks experimenting with blockchain, it shows howimportant this technology is to the financial world [3].

The Internet of Things (IoT) and Blockchain are two topics which are causing a great deal of exposure and elation,not just in the technical environment but in the far-ranging business world, too. However, the idea that putting them together could lead to something even greater than the sum of its individual parts, is something which is starting to gain attention. Put them together and in theory, you have anempirical, secure and immutable method of recording data processed by "smart" devices in the IoT. Simplified business workings, better customer experience and cost efficiencies are made possible due to blockchain based IoT solutions. It isoften said that IoT needs Blockchain and vice-versa.

Four ways IoT can exploit blockchain technology: Trust building, Cost reduction, Accelerated data exchanges and Scaled security.

II. RELATED WORK

Blockchain in Financial Applications:

In this paper, the author has started with an overview of blockchain technology and later in the paper described some of the issues but, the author missed out on some key issues. In addition to this, the description of each issue is obscure with negligible references. Further, in the paper, he has proposed solutions to the problems presented in the paper which are as follows,

- Pegged side-chain: It is the concept of integrating two blockchains by peg mechanism to facilitate bidirectional transfer between the chains. This solution is fundamentally for scalability and privacy problem, one of which isn't addressed in this paper at all. When we are integrating two blockchains, fundamental problems more or less remains the same. By adopting this approach developers have added a layer of complexity (SPV) in the already complex system which will further hinder the performance of blockchain. Furthermore, Integrating two blockchain also mean that there will be more than oneasset at disposal, so one will have to significantly change the architecture to identify any malicious transactions.
- Two-factor authentication: This solution suggests thatprivate keys should be broken down in parts andstored in different devices. It addresses the problem of transaction malleability and privacy. It can be very useful if implemented. For example, a person stores one part of the key in his/her mobile phone and another part in their wallets. What if the person mobile is hacked or cloned? Then the hacker will have part of users private key and time has proven that wallets can be

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Intelligent Parking Management System Using Android And Iot

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Paper ID-133

ABSTRACT : In this fast-growing economy, the number of vehicle users increases exponentially demanding more parking space. Pervasive presence of smart phone encourages users to prefer mobile application based solutions. Growth of android and Iot has paved way for integration of mobile devices, wireless communication technologies. This paper proposes an android based Smart parking system that integrates with mobile Application. It provides a comprehensive parking solution both for the user and owner of the parking space. Features are provided for reserving a parking space, authenticating a reserved user, identifying nearest free space depending on the size of the vehicle, navigating to the parking slot and computes accounts information on daily, weekly and monthly basis. IR sensors are used to identify if a parking spot is free. Availability of a free slot with its location information is transmitted using WIFI module technology, microcontroller and wireless communication technology to the server and is retrieved though a mobile application. RFID tag attached to a vehicle is used to authenticate a user who reserves the parking slot on a hourly, daily, weekly or monthly basis. A scheduling algorithm is used to identify the nearest free slot based on the size of a vehicle. The owner of the parking space can get the analytics of the number of free and available slots for a given period, the occupancy rate on week days and weekend and the amount collected for a given period and can use it for fixing variable parking fees. The mobile application is designed to provide rich customer experience.

KEYWORDS: Smart Parking, Android, Iot, Mobile Application, RFID, Analytics

I. INTRODUCTION

Now a days, main problem in malls, function halls and etc., is parking. It is due to the lack of sufficient parking space. Now a days the vehicles in a family are greater than the head count of the family members, and due to this the vehicles are also increased in the country, which leads to the parking scenario which is unhappily falling short to the current requirements in the country. Due to this parking is difficult and it also increases the time needed to park the vehicle with increase in the fuel consumption of the vehicle. And during the working days the companies and offices are facing the problem of the parking in urban areas. Now a days vehicles are most affordable to the low income group families also and the vehicles especially the cars are taking lot of space. Due to the increase in vehicles the parking space is also not sufficient in this congested cities. Whether at a shopping malls, stations and airport, problems with parking is a big issue. Most of the time people spend their time on searching parking, to park their vehicles. Thus, lot of congestion occurs in the traffic which leads to a tedious job to find the parking space to park their vehicle. The most traffic occurs only because of vehicle congestion in the urban areas thus people are wasting time in searching the parking area abnormally to park their vehicles. And one more issue is also added to this is pollution, which effects the entire environment due to this increase in vehicles.

II. RELATED WORK

[1]The sensors used in android based smart parking system stores and accesses data from remote locations with the help of the cloud these factors give raise to cloud of things (COT). The nodes could be monitored and controlled from any location the system that we propose provides information regarding the availability of the parking slots with the help of the mobile application the users from the remote location can book the parking slots. [2] An algorithm is used to increase efficiency of cloud-based parking system and network architecture technology is used. This algorithm is used to find the lowest cost parking space. Considering the number of parking space available and also considering the distance of the parking space from the user. The user can directly access the cloud-based server and find the information on the parking space. The user can also install an application in their mobile phones to access this information. With the help of this algorithm, waiting time of the user to find a parking space can be minimised. Security aspects are not included in this paper. [3] A wireless sensor node along with smart phone application is being used to find the parking space. Since, wireless technology is used here the system has high accuracy and efficiency. In this system, onboard units are used to communicate with other vehicles. The user parks his vehicle in any one of the several bays available a mechanical lift lifts the vehicle out. number of hops will help in reducing the range of the transmission power. Route discovery has been done in the same way as being done in on-demand routing algorithms. After packet has been reached to the destination, destination will wait for time δt and collects all the packets. After time δt it calls the optimization function to select the path and send RREP. Optimization function uses the individual node's battery energy, if node is having low energy level

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IoT based Air Quality monitoring system using Sensors with Machine Learning analysis

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Paper ID:134

ABSTRACT: MQ135 a gas sensor is used to measures the level of NH3, NOx, alcohol, Benzene, smoke, CO2 in air. The resistance connected to MQ135 is different for various kinds of concentrated gases, so the sensitivity adjustment of components is necessary at time of using. Air Quality using MQ135 sensor along with Carbon Monoxide CO using MQ7 sensor. Measuring Air Quality is an important element for bringing lot of awareness in the people to take care of the future generations a healthier life. Based on this, Government of India has already taken certain measures to ban 'Single Stroke' and 'Two Stroke' Engine based motorcycles which are emitting high pollution comparatively. In this paper using IOT and machine learning techniques, using graphical representations of pollution level including temperature and humidity Dashboard is built, and an awareness to every individual about the harm has been done to our environment. Already, New Delhi is remarked as the most pollution city in the world recording Air Quality above 300PPM. To get the present air quality we use IOT sensors and to predict pollution in upcoming days Machine learning algorithms is implemented. To set the dashboard to public such that everyone can come to know the Air Quality at the location where the system is installed.

KEYWORDS: MQ135 sensor, MQ7sensor, IOT, Air Quality Monitoring

I.INTRODUCTION

Air is getting polluted because of release of toxic gases by industries, vehicle emissions and increased concentration of harmful gases and particulate matter in the atmosphere. The level of pollution is increasing rapidly due to factors like industries, urbanization, increasing in population, vehicle use which can affect human health. Particulate matter is one of the most important parameter having the significant contribution to the increase in air pollution. This creates a need for measurement and analysis of real-time air quality monitoring so that appropriate decisions can be taken in a timely period. This system presents a real-time air quality monitoring. Internet of Things (IoT) is nowadays finding profound use in each and every sector, plays a key role in our air quality monitoring system too. The setup will show the air quality in PPM in webpage so that we can monitor it very easily. In this IoT project, you can monitor the pollution level from anywhere using your computer. The problem with MQ135 sensor is that specifically it can't tell the Carbon Monoxide or Carbon dioxide level in the atmosphere, but the pros of MQ135 is that it is able to detect smoke, CO, CO2 and NH4. So, just to tell the individual gases level particularly, we have used CO (Carbon Monoxide) MQ7 sensor. After getting the sensor values we proceed with analysis and prediction. More than one algorithm is trained as the accuracy of algorithm differs with data scattering different algorithms gives different accuracy so after training the algorithms the algorithm with highest accuracy is considered for upcoming days prediction and the sensors can be deployed at any geographic location so we are using location based values.

II. RELATED WORK

Xiaoke Yang et.al [1] This paper proposes an open platform of a Wi-Fi enabled indoor air quality monitoring and control system, which could be incorporated into such a 'smart building' structure. The complete software and hardware design of this system is presented, along with a series of control experiments. The proposed system operates over an existing WiFi wireless network utilizing the MQTT protocol. It is capable of monitoring the indoor air quality as well as controlling an air purifier to regulate the particulate matters concentration. Experiment results under a real world office environment demonstrate the effectiveness of the proposed design.

H. Ali et.al [2], in this paper, a low-cost solar-powered air quality monitoring system based on ZigBee wireless network system technology is presented. The solar powered network sensor nodes can be deployed by schools to collect and report real-time data on carbon monoxide (CO), nitrogen dioxide (NO2), dust particles, temperature, and relative humidity. The proposed system allows schools to monitor air quality conditions on a desktop/laptop computer through an application designed using LabVIEW and provides an alert if the air quality characteristics exceed acceptable levels. They tested the sensor network successfully at the Singapore campus of the University of Newcastle, Australia. The

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Network Intrusion Detection Using Supervised Machine Learning Technique With Feature Selection

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Paper ID-138

ABSTRACT: A novel supervised machine learning system is developed to classify network traffic whether it is malicious or benign. To find the best model considering detection success rate, combination of supervised learning algorithm and feature selection method have been used.
Through this study, it is found that Random forest Algorithm based machine learning with wrapper feature selection outperform support vector machine (SVM) technique while classifying network traffic. To evaluate the performance, NSL-KDD dataset is used to classify network traffic using SVM and Random forest techniques. Comparative study shows that the proposed model is efficient than other existing models with respect to intrusion detection success rate.
Keywords: Intrusion Detection, Supervised Machine Learning

1.INTRODUCTION

With the wide spreading usages of internet and increases in access to online contents, cybercrime is also happening at an increasing rate. Intrusion detection is the first step to prevent security attack. Hence the security solutions such as Firewall, Intrusion Detection System (IDS), Unified Threat Modeling (UTM) and Intrusion Prevention System (IPS) are getting much attention in studies.
IDS detects attacks from a variety of systems and network sources by collecting information and then analyzes the information for possible security breaches. The network based IDS analyzes the data packets that travel over a network and this analysis are carried out in two ways. Till today anomaly based detection is far behind than the detection that works based on signature and hence anomaly based detection still remains a major area for research.
The challenges with anomaly based intrusion detection are that it needs to deal with novel attack for which there is no prior knowledge to identify the anomaly. Hence the system somehow needs to have the intelligence to segregate which traffic is harmless and which one is malicious or anomalous and for that machine learning techniques are being explored by the researchers over the last few years. IDS however is not an answer to all security related problems. For example, IDS cannot compensate weak identification and authentication mechanisms or if there is a weakness in the network protocols.
The main objective of this project is to solve the problems face by existing NIDS techniques. In response to this we have proposed our novel NDAE method for unsupervised feature learning. We have then built upon this by proposing a novel classification model constructed the RF classification algorithm.

2.LITERATURE SURVEY

2.1 Network Intrusion Detection System (NIDS) using Machine Learning Perspective

Many intrusion detection systems are rule based which cannot detect novel attacks. Moreover, rule based technique is time consuming due to the encoded rule manually and it highly depend on the prior knowledge of the known attacks. Therefore, we proposed network based intrusion detection system (NIDS) using machine learning technique. NIDS is meant to be a device or a system application that monitor a network traffic and event occurring in a computer system. In network security intrusion detection system play a major role to detect different kinds of attacks. The machine learning technique can be used to increase the attack detection performance. In this paper Network intrusion detection system is proposed with the method of principle component analysis (PCA) and support vector machine (SVM). This proposed method was tested on KDD Cup dataset and attack detection accuracy is compared to decision tree and naive bayes algorithms.

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Pneumonia From Chest X-Ray Convolutional Neural Network

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Paper ID-142

ABSTRACT: Corona Virus continues to possess its effects on people's lives across the world. The screening of infected persons is a vital step because it is fast and low-cost way. Chest X-ray images play a major crucial role and it is used for examination in the detection of CORONA VIRUS(COVID-19). Here radiological chest X-rays are easily available with low cost only. In this a survey paper, we are using a Convolutional Neural Network(CNN) based solution that will benefit in detection of the Covid-19 Positive patients using radiography chest X-Ray images. To test the efficiency of the solution, we are using public available X-Ray images of Corona Virus-Positive cases and negative cases. Images of Positive Corona Virus patients and pictures of healthy person images are divided into testing images and trainable images. The solution which we are providing will give good results in classification accuracy within the test set-up. Here we are going to develop a GUI application for medical Examination areas. This GUI application can be used on any computer and performed by any medical examiner or technician to determine Corona Virus positive patients using radiography X-ray images. The result will be shown or provided by this application is really fast and done within a few seconds. Keywords: Deep Learning, CNN, Convolutional neural networks, Deep CNN, Detection

KEYWORDS: Deep Learning, CNN, Convolutional neural networks, Deep CNN.

I. INTRODUCTION

The risk of Covid-19 is immense for many, especially in developing nations where billions face energy poverty and rely on polluting forms of energy. The WHO estimates that over 4 million premature deaths occur annually from household air pollution-related diseases including Covid-19. Over 150 million people get infected with Covid-19 on an annual basis especially children under 5years old. In such regions, the problem can be further aggravated due to the dearth of medical resources and personnel. For example, in Africa's 57 nations, a gap of 2.3 million doctors and nurses exists. For these populations, accurate and fast diagnosis means everything. It can guarantee timely access to treatment and save much needed time and money for those already experiencing poverty.

In recent times, CNN-motivated deep learning algorithms have become the standard choice for medical image classifications although the state-of-the-art CNN-based classification techniques pose similar fixated network architectures of the trial-and-error system which have been their designing principle. U-Net, Seg-Net, and Cardiac-Net are some of the prominent architectures for medical image examination. To design these models, specialists often have a large number of choices to make design decisions, and intuition significantly guides manual search process. Models like evolutionary-based algorithms and reinforcement learning (RL) have been introduced to locate optimum network hyperparameters during training. However, these techniques are computationally expensive, gulping a ton of processing power.

CNNs have an edge over DNNs by possessing a visual processing scheme that is equivalent to that of humans and extremely optimized structure for handling images and 2D and 3D shapes, as well as ability to extract abstract 2D features through learning. The max-pooling layer of the convolutional neural network is effective in variant shape absorptions and comprises sparse connections in conjunction with tied weights. When compared with fully connected (FC) networks of equivalent size, CNNs have a considerably smaller amount of parameters. Most importantly, gradient based learning algorithms are employed in training CNNs and they are less prone to diminishing gradient problem. Since the gradient-based algorithm is responsible for training the

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A Security and Privacy concepts in Fog Computing

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Paper ID -144

ABSTRACT: Cloud computing is presently a mainstream processing worldview that can give end clients admittance to configurable assets on any gadget, from anyplace, whenever. During the previous years, distributed computing has been created drastically. In any case, with the advancement of the Internet of Things, the detriments (like high inactivity) of cloud processing are continuously uncovered because of the significant distance between the cloud and end clients. Fog Computing is proposed to tackle this issue by stretching out the cloud to the edge of the organization. Specifically, fog computing presents an halfway layer considered fog that is intended to handle the correspondence information between the cloud and end clients. Henceforth, fog computing is typically considered as an augmentation of distributed computing. In this article, we talk about the plan issues for information security and protection in fog computing. Extraordinarily, we present the remarkable information security and protection configuration challenges introduced by the fog layer and feature the reasons why the information security strategies in distributed computing can't be straightforwardly applied in Fog computing.

KEYWORDS: Energy efficient algorithm; Mantes; total transmission energy; maximum number of hops; network lifetime

I. INTODUCTION

Cloud computing as quite possibly the most well known processing ideal models has been grown significantly during the previous years. As revealed by IDC [1], overall spending on open cloud computing has been developing at a rate 4.5 occasions quicker than that of IT spending. This speedy advancement is predominantly due to the "AAA" property of distributed computing. In particular, the cloud could give end clients admittance to configurable processing assets on any gadget, from anyplace, whenever. Moreover, cloud specialist organizations are normally furnished with proficient tasks and support groups, which ensures the dependability, network, and security of the assets and decreases IT framework costs on the client side. In the interim, as the Internet of Things (IoT) is growing quickly, loads of wearable gadgets, smart meters, remote sensors, associated vehicles and other keen gadgets have gotten drenched in our every day lives. Gartner, Inc. [2] gauges that 20.4 billion associated things will be being used worldwide by 2020. Bunches of information will be created by these gadgets [3], while IoT gadgets need more registering assets to handle these information. To settle this issue, cloud computing is normally included during information handling. Specifically, this gigantic volume of information are transferred to and handled in the far off cloud

II. FOGCOMPUTING OVERVIEW

Definition: There are a couple of terms like fog computing, for example, mobile cloud computing, portable edge processing, and so on, Beneath we clarify every one of them.

1) **Local Cloud:** Local cloud is a cloud implicit a neighborhood organization. It comprises of cloud-empowering programming running on neighborhood workers and generally upholds transaction with distant cloud. Nearby cloud is correlative to distant cloud by running committed administrations locally to upgrade the control of information security.

2) **Cloudlet:** Cloudlet is "a server farm in a container", which follows cloud computing worldview in a more thought way and depends on high-volume workers [4]. Cloudlet zeros in additional on offering types of assistance to delay-delicate, bandwidth limited applications in area.

3) **Mobile Edge Computing:** Mobile edge processing [5] is basically the same as Cloudlet aside from that it is principally situated in versatile base stations.

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REVIEW ON UBIQUITOUS COMPUTING

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Paper ID -145

ABSTRACT: This paintings affords a survey of ubiquitous computing studies that's the emerging area that implements conversation technologies into everyday life sports. This research paper provides a class of the studies regions at the ubiquitous computing paradigm. In this paper, we gift not unusual architecture ideas of ubiquitous systems and examine vital factors in context-aware ubiquitous systems. In addition, this research paintings provides a unique structure of ubiquitous computing system and a survey of sensors wished for packages in ubiquitous computing. The desires of this studies work are threefold: i) function a guideline for researchers who're new to ubiquitous computing and need to make a contribution to this research location, ii) provide a novel device structure for ubiquitous computing machine, and iii) provides in addition research instructions required into first-class-ofservice assurance of ubiquitous computing.

KEYWORDS: Ubiquitous Computing Paradigm, Context-Aware Systems, Pervasive Computing Middlewares

1. INTRODUCTION

The fundamental focus of ubiquitous computing is on the powerful and efficient use of smart areas, invisibility, localized scalability, and context-consciousness. The goal of ubiquitous computing research is to refine devices to the factor in which their use is obvious. For many programs transparent operation requires that the tool be context-aware. Unfortunately, the context-conscious gadgets of an man or woman can be used to infer fantastically private facts. Hence, those gadgets must be cautiously designed; otherwise they will become a ubiquitous surveillance system. Therefore, current modern ubiquitous systems want to be examined from the angle of assaults which may be fairly expected in opposition to these structures.

1.1WHAT IS UBIQUITOUS COMPUTING?

Ubiquitous computing is a idea where computing is made to seem anywhere using any tool, in any region and in any format.

In ubiquitous computing environments computation is embedded. With improvements in pc technological know-how and generation the pc applications are seamlessly included into our daily lives. The devices worked in networked and standalone surroundings and able to verbal exchange with the human and with every others. These devices guide context-conscious application, nomadic customers, place aware offerings, and cell information access. Ubiquitous structures offer everywhere and every time access to records and numerous services whilst making the presence of the device "invisible" to the consumer.

1.2 PROPERTIES OF UBIQUITOUS COMPUTING SYSTEMS

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(14)

IOT Based Ubiquitous Health System

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Paper ID -148

ABSTRACT: The Internet of Things (IoT), is an idea and a model that incorporates an assortment of things or items that can communicate with each other through remote associations, link, cable wires and can work with others things or objects to make new administrations and applications to accomplish shared objectives, particularly in the biomedical field. This article proposes a m-IoT framework for distant observing of clinical signs. Clinical information can be obtained at the patient's home; information is recovered by an application on the cell phone and after an underlying handling, information is communicated to a cloud server. The family doctor or medical clinic specialists can counsel the information on this cloud server to follow the patient's advancement over the long run.

KEYWORDS: Iot (Internet of things),sensors.

I. INTRODUCTION

In view of the way that in our every day life schedules the innovations,technologies become further developed, we can discover that we have the chance to work on the method of medical care in day by day life. For instance, it is very costly to go consistently to the family doctor, because of the time burned-through for planning to a standard counsel for various sicknesses and indications, for example, pulse, blood glucose, weight, holding up before the bureau to be taken by the treating doctor, and to wrap things up, the hanging tight an ideal opportunity for the result of the examinations. Lately, PC innovation had a fast rising, its improvement is hazardous, being utilized today in every aspect of movement. Portability is vital these days. Cell phones are getting increasingly more open through cost, quality and execution. Android-based applications can turn out to be exceptionally valuable when they can interface with workers that store and oversee information bases by means of an Internet connection.The Internet of Things (IoT) is an idea and certainly a model that consider the pervasive presence of an assortment of things or articles that collaborate with one another through remote or wired associations with special tending to plans. These can work with others things or objects to make new administrations and applications to accomplish shared objectives. the primary objective of the IoT is to permit the things and objects to be associated whenever and anyplace with any client. Since gadgets can give data about them, the items can be perceived, can learn and take setting related choices. They can get to data that has been taken over by an association with different things, or they can be portions of complex administrations. The actuation of IoT advancements, for example, sensor organizations, RFID, M2M, portable web, semantic inquiry, information mix, IPv6 can be gathered into three classes, innovations that permit the getting of the relevant data, advances that permit the preparing of the context oriented data, advances that work on the security and secrecy of information (for instance clinical information for patients). This article proposes a m-IoT framework for far off checking of clinical signs. Hence, clinical information can be obtained at the patient's home; and are communicated to a cloud worker. The family doctor or clinic specialists can counsel the information on this cloud worker to follow the patient's development over the long run.

II. RELATED WORK

[1]The Internet of things (IoT) can be perceived as a far-reaching vision with technological and societal implications. From the perspective of technical standardization, the IoT can be viewed as a global infrastructure for the information society, enabling advanced services by interconnecting (physical and virtual) things based on existing and evolving interoperable information and communication technologies (ICT). Through the exploitation of identification, data capture, processing and communication capabilities, the IoT makes full use of "things" to offer services to all kinds of applications, whilst ensuring that security and privacy requirements are fulfilled. NOTE – The IoT is expected to greatly integrate leading technologies, such as technologies related to advanced machine-to-machine communication, autonomic networking, data mining and decision-making,

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Surveying & Analysis Of Parkinson's Disease By Applying Ml Algorithms

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Paper ID-158

ABSTRACT: Parkinson's disease (PD) is one of the prime health problems in the world. It is recognized that around one million people suffer from Parkinson's disease. Thus, it is necessary to identify Parkinson's disease in an early stage so that early plan for the necessary treatment can be made, to save lives and advice few life style changes for a peaceful and healthier life at low costs. The proposed predictive analytics framework is a cluster of Decision Tree, Support Vector Machine, Naive Bayes Algorithm, Gradient Tress Boosting Algorithm, and Stochastic Gradient Descent which is used to acquire insights from patients. We obtain voice dataset from UCI Machine learning repository as input. The experimental outcome indicates that an early detection of PD will expedite clinical monitoring of elderly folk and increase the chances of their life span and improves lifestyle to lead peaceful life.

Keywords: Parkinson's disease(PD), Decision trees, Naive Bayes Algorithm, Support vector Machine(SVM), Gradient Tree Boosting Algorithm, Stochastic Gradient Descent.

I.INTRODUCTION

PD is a progressive neurodegenerative disorder. It affects certain brain cells that support in controlling the movement and coordination. Dopamine is a hormone and neurotransmitter, a chemical that is generated by brain cell. It is used to transmit signals to other brain cells to control the muscle activity [1].

PD causes, degeneration of dopamine in the brain cell which leads to abnormal muscle activity. It is a common disorder observed in senile person [60years and above] which occurs in 1% of the population.
[1] There are several symptoms that cause PD. Common symptoms in PD are muscular rigidity (limbs and upper half of the body is inflexible), shivering (vibration inupper and lower limbs or jaws, speech problem), expressionless face, Bradykinesia (slow movements), lethargy (unresponsiveness and inactivity),postural instability (depression and emotional changes), involuntary movements, dementia (loss of memory which is a common disorder of Alzheimer's disease), thinking inability and sleeping disorders. P Certain phases in Parkinson's disease are: • Primary - Due to unknown reasons

- Secondary - Dopamine deficiency
- Hereditary- Genetic origin
- Multiple system atrophy - Degeneration of partsother than mid brain.

[2] For later stages, surgery is recommended for some people. It does not cure PD, but it may help to ease symptoms. Surgery, Deep Brain Stimulation (DBS) is offered to people with advanced PD.[4] Electrodes can be embedded into specific part of the brain that sends signals to your brain and may reduce the PD symptoms.DBS is a stabilized medication which reduces involuntary movements, tremor and rigidity.
Approximately 15% of people with PD have a family history of the disorder. In a few cases, the disease may be inherited through certain gene changes. PD may occur at the age of 60. [3]Due to technological development in information technology, and healthcare areas resulted in better outcomes and low-cost

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Arduino Based Home Automation Using Android Application

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Paper ID-162

ABSTRACT: We are living in 21st century where automation of any form i.e. home or industrial plays an important role in human life. When it comes to industrial automation, the concept is applied to large machines or robots which help in increasing the efficiency in terms of production, energy and time. Home automation on the other hand involves automating the household environment. This is possible because of the smartphones and internet that we are widely using. Home automation can be again divided in to just controlling the appliances using a smartphone from a remote location and another type filled with sensors and actuators which controls the lighting, temperature, door locks, electronic gadgets, electrical appliances etc. using a "Smart" system. Technology is a neverending process. To be able to design a product using the current technology that will be beneficial to the lives of others is a huge contribution to the community. This project presents the design and implementation of a low cost but yet flexible and secure cell phone-based home automation system. The design is based on a standalone Arduino BT board and the home appliances are connected to the input/ output ports of this board via relays. The communication between the cell phone and the Arduino BT board is wireless. This system is designed to be low cost and scalable allowing variety of devices to be controlled with minimum changes to its core. Password protection is being used to only allow authorized users from accessing the appliances at home.

I. INTRODUCTION

Today's homes require sophistication control in its different gadgets which are basically electronic appliances. This has revolutionized the area of home automation with respect to an increased level of affordability and simplicity through the integration of home appliances with smart phone and tablet connectivity. Smart phones are already feature-perfect and can be made to communicate to any other devices in an ad hoc network with a connectivity options like Bluetooth.

With the advent of mobile phones, Mobile applications development has seen a major outbreak. Utilizing the opportunity of automating tasks for a smart home, mobile phone commonly found in normal household can be joined in a temporary network inside a home with the electronic equipment. Android, by Google Inc. provides the platform for the development of the mobile applications for the Android devices. Home automation system is a mobile application developed using Android targeting its vast market which will be beneficial for the masses. Automation of the surrounding environment of a modern human being allows increasing his work efficiency and comfort. There has been a significant development in the area of an individual's routine tasks and those can be automated.

In the present times, we can find most of the people clinging to their mobile phones and smart devices throughout the day. Hence with the help of his companion – a mobile phone, some daily household tasks can be accomplished by personifying the use of the mobile phone. Analysing the current smart phone market, novice mobile users are opting for Android based phones. It has become a second name for a mobile phone in layman terms. Home Automation System (HAS) has been designed for mobile phones having Android platform to automate an 8-bit Bluetooth interfaced microcontroller which controls a number of home appliances like lights, fans, bulbs and many more using on/off relay. This project presents the automated approach of controlling the devices in a household that could ease the tasks of using the traditional method of the switch. The most famous and efficient technology for short range wireless communication- Bluetooth is used here to automate the system. The HAS system for Android users is a step towards the ease of the tasks by controlling one to twenty four different appliances in any home environment.

II. PROBLEM STATEMENT

While people are pursuing ever-growing high quality of their lives today. This leads to more and more facilities and home appliances poured into their buildings. How to control and manage these versatile facilities and appliances in a house? • Usually conventional wall switches are located in different corners of a house and, thus

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Experimental investigation on compression and bending properties of epoxy composites reinforced with Al_2O_3, kenaf/hemp fibers for orthopaedic implants

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Abstract. Composites in medical sectors are effective and productive phenomena in fulfilling various necessary demands. Through proven results as a base, this technique can be used for further research to enhance the existing parameters. In this connection, present research extensively focuses upon studying the mechanical properties (Compression and Bending) and characterization of fibre reinforced composite materials along with Al_2O_3 as filler materials. Present study involves the investigation of mechanical properties like compression and bending for NFRPC (Natural Fiber Reinforced Polymer Composite) as bio material, Epoxy resin-LY556 as matrix material, using suitable hardener and natural fibers (Kenaf/Hemp) as reinforcement materials considering Al_2O_3as filler material with appropriate percentage to enhance strength and hardness of the composites. Prepared specimens were subjected to (Compression/D-3410 and Bending/D-790) examinations. Later they were compared with the femur bone properties. It was noticed that NFRPC properties will match the femur Bone Strengths and results shows 12, 18 & 24% of NFRPC material are appropriate for orthopaedic implants. From the investigated results finally, it concludes that the mechanical properties like compression and bending will be increased with increasing proportion of fiber in composites.

1. Introduction

In growing demand to meet the industrial needs for satisfying applications to bridge the various operations, the technology in unearthing the newer and their combinations of materials will have a prominent and vital role to assure for successful functioning. Currently Industries are focusing upon choosing the consistent and suitable materials for their specific services considering technically benefit able aspects interms of both effectiveness and suitable application. Composites are generally known process for materials combination and their successful blending to extract the required application in various fields like automobile, aerospace, defence, medical, Etc [1]. Composite oriented materials have entered into the expanded fields yielding attractive results in connection with satisfying serviceable products by various processes. In research fields composite materials are in great demand for innovative material combination for successful scope in the respective areas of investigations [2].

Now-a-days NFRPC is widely adopted in various fields because of its ample advantages. The primary reason for choosing these materials is because of its eco-friendly nature, recyclability and biodegradability [3]. NFRPC are chosen to use in the various manufacturing industries like automobile, medical, household appliances etc. natural fiber are referred to the fibers which are

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Investigations of tensile properties of modified epoxy-based composites reinforced with kenaf/hemp fibers for orthopaedic implants

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Abstract. The aim of this work intense on study of Femur Bone and compilation of the strength and further parameters of bone and compare the investigational results of the 12%, 18% & 24% NFRPC material with the Femur bone. This study signifying the lowest-weight, lowest-Density and highest-strength Bio composite, biocompatible material utilizes or advises to the Orthopedic Implants particularly for Femur bone. From the investigational results of Tensile strength of all 12%, 18% & 24% NFRPC material will match with femur Bone strength fand recommended these polymers for Femur bone replacement.

1. Introduction

CM (Composite material) is made when more than two material (reinforce, fillers, and binder) unify (merge) together of different physical and chemical properties, upon collaboration it will yield a material with unique properties [1]. Within the composite, materials which were unified will not blend or federate to each other. By adopting this can improve the characteristics of base material and are applicable in many instances for instance to become lighter, stronger, and resistant to electricity [2].

The cause for improved unique strength, resistant to electricity, durability in composite is due to reinforcing phase. The reinforcement generally refers to fiber or particulate. Particulate composite consists of very small particles of one material in-built in to another material [3]. The particulate can be very close to that of size of <0.25 Microns particles, fibers are chopped like platelets, hollow spheres etc. they act as a reinforcement to the matrix material, by this enhancing the strength of the material. It will result in providing great creep resistance, extraordinary tensile strength at elevated temperatures, improved toughness, and increase in strength to weight ratio (lesser density and higher tensile strength). It is used in metals such as AL alloy, polymers, and ceramics.

1.1. Necessary of Composites

Composite can also afford design resilience (flexibility) because many of them can be moulded into difficult (complex) shapes. Composites can be used in various streams with low maintenance and its environmentally friendly nature is one of the reasons for choosing it. A cramped (small) elite (crack) in a piece of metal can spread promptly (rapidly)with serious consequences (ie. in aircraft). But the fibers in composite deed (act) block the widening of any cramped elite and to share the stress around. Proper composition will result in providing resistance to corrosion and heat. This makes them to use in the components which are subjected for extreme environment such as space craft, chemical-handling equipment and boats etc. Steels and other major materials cannot be completely replaced by

WEAR CHARACTERISTICS OF DOUBLE CERAMIC PARTICULATE HYBRID ALUMINIUM MATRIX COMPOSITE

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Abstract: - Metal matrix composites got popularity due to their light weight and high strength and replacing metal parts from various applications like aerospace, automobile and biomedical. Aluminum matrix composites (AMC) are suitable for the aerospace industries and still the research is going on to use it for other applications. In this research work, a double ceramic particulate AMC was synthesized. The ceramic powders used were alumina (Al_2O_3) in wt. % of 0.5, 1.0 and 2 and silicon dioxide (SiO_2) in wt. % of 0.5 and 1.0. The synthesis of composites was done by stir casting method. SEM analysis showed that porosity was reduced and the distribution of reinforcement particles were uniform throughout the matrix. Wear test was carried out using pin on disc wear testing machine, results showed reduction in wear. SEM analysis of worn out specimen showed transition from adhesive wear to abrasive wear for hybrid composites.
Keywords: AMC, Al_2O_3, SiO_2, Stir casting

1. Introduction

In the present scenario, a composite is a multiphase material can be prepared artificial or natural way by adding the constituent phases, which is chemically dissimilar and have separate distinct interface. Basically, the composite materials have been identified by two phases namely, matrix and reinforcement. Matrix phase is characterized by continuous phase whereas other phase is reinforcement which is dispersed phase [1]. The development of metal matrix composites made significant change in the aerospace and automotive industries. MMCs have been made by using most of the metals and their alloys as the matrix material, but only few metals and alloys are available for high and low temperature applications. In air craft industries, the material selected should be light weight and high strength. The popular matrix materials such as titanium, magnesium and aluminum and its alloys are popular materials suitable for aircraft components. The reinforcement material selected for making MMC should have high modulus and the resulting composite material possess better properties than the most of the alloys. The suitability of composites at different service temperatures depends on its melting point, physical and mechanical properties. Some metals have low melting point and the reinforcement materials should improve the melting point. Aluminum and its alloys can be a one good choice as matrix material which is light in weight and high strength to weight ratio. Discontinuous reinforced aluminium matrix composites (DRAMCs) are the composites in which discontinuous fibers are used like whiskers, particulates etc., which strengthen the aluminum matrix. Most of the researchers concentrated on the overall performance of the composites by selecting the proper reinforcing material. The performance of DRAMCs can be improved in three different ways. First way is to find the cheaper reinforcement material to reduce the overall production cost and to tackle the limited availability of the ceramic reinforcement material. This can be achieved by using the materials from industrial wastes and agro waste derivatives. Some of the investigations showed the usage of alternative reinforcements in the preparation of composites exhibits improved properties than

EFFECT OF DISPERSION AND IMPROPER BONDING OF NANOFILLER POLYMER COMPOSITES

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Abstract: - Nanofiller is used to enhance the properties in composite materials, with at least one phase of nanomaterials that can be referred as nanocomposites. The nanomaterial due to uniform dispersion recently used in advanced polymer nanocomposites, to mix effectively in the polymer matrix. The production of polymer composites with nanofiller is limited due to the unresolved issues such as agglomeration during processing, high production cost and limited availability of good quality. Graphene filled nanocomposites is a novel material and considered in different applications. The properties of the nanocomposites mainly depend on the arrangement of graphene layers with the polymer matrix and interfacial bonding between them. Here an attempt is made to develop polymer composites using graphene as reinforcements and epoxy as matrix materials. Sonication is a process of applying ultrasound energy to disperse nanoparticles in epoxy. The sound waves that are created in sonication are generally large ultrasound waves and during this process, considerable heat is produced. If the sonication treatment is too long, nanoparticles were seriously damaged, particularly when a probe sonicator is used. The localized damage causes nanoparticles to deteriorate the mechanical properties of the polymer composites. The study from XRD and SEM showed that the use of graphene at higher weight % resulted in a decrease in strength of the composites. Hence, it is not a better choice to produce nanocomposites at increased addition of nanofiller.

Keywords: Nanofiller, Graphene; Sonication; Composites;

1. Introduction

The discovery of graphene used as a nanofiller for the production of lightweight, low cost, and high-performance composite materials for various applications. Advanced composites are composite materials that are traditionally used in the aerospace components, parts of racing cars, transport vehicles applications[1]. Choice of fabrication method depends on matrix properties and the effect of matrix on properties of reinforcements. The incorporation of nanoparticles into polymers exhibit behavior different from conventional composite materials with microscale structure, due to the small size of the structural unit and the high surface to volume ratio[2].

In future a large number of new graphene-based polymer nanocomposites using thermoplastic, thermosetting is used due its unique properties. Synthesis of graphene-polymer composites, may have technical challenges which need to be addressed for mass production. The key to the successful development of polymer nanocomposites is to achieve homogeneous dispersion of nanofillers in the polymer matrix[3]. The different processing methods used for combining graphene with polymer matrix are in-situ polymerization, solution processing, and melt processing[4].

The ultra sound energy agitates particles using an ultra-sonic bath results in the separation of individualized nano particle from the bundles. Nanocomposites consisting of a polymer and nanofiller possess improved properties due to strong interfacial interaction between the matrix and nanofiller[5].

2. Literature review

Literature survey is required to understand the specific objective of the research work. From the literature studies gaps has been identified to manufacture nanopolymer composites. The first,

Machine Learning Application for Black Friday Sales Prediction Framework

Publisher: IEEE Cite This PDF

H V Ramachandra ; G Balaraju ; A Rajashekar ; Harish Patil All Authors

Abstract: Understanding the purchase behavior of various customers (dependent variable) against different products using their demographic information (IS features where most of th... **View more**

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Abstract:
Understanding the purchase behavior of various customers (dependent variable) against different products using their demographic information (IS features where most of the features are self -explanatory. This dataset consist of null values, redundant and unstructured data. Machine learning is the most common applications in the domain retail industry. This concept helps to develop a predictor that has a distinct commercial value to the shop owners as it will help with their inventory management, financial planning, advertising and marketing. This entire process of developing a model includes preprocessing, modelling, training testing and evaluating. Hence, frameworks will be developed to automate few of this process and its complexity will be reduced. The algorithm we proposed was Random Forest regressor that performed an average accuracy of 83.6% and with minimum RMSE (Root Mean Squared Error) value of 2829 on tire Black Friday sales dataset.

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Design and Simulation of Loan Approval Prediction Model using AWS Platform

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HV Ramachandra ; G Balaraju ; R Divyashree ; Harish Patil All Authors

Abstract: To determine and to understand the working of loan systems for the cause of Loan Prediction using the demographic information of various factors that combine to form the ... **View more**

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Abstract:

To determine and to understand the working of loan systems for the cause of Loan Prediction using the demographic information of various factors that combine to form the nature of the approval using algorithms and concepts of Machine Learning and ultimately deploying this model on Cloud Based Platforms. Machine learning being aided by Cloud services are progressively seeing immense growth in the industry as they have benefits of Scalability, Affordability and easy use of models on systems as and when required. Therefore datasets are designed, automated and put under testing and training. The major aim of this project is to predict which of the customers will have their loan paid or not using prominent algorithms like Decision Tree, Logistic Regression and Random Forest. Logistic Regression Confusion matrix analysis is relatively in accordance to Decision Tree and Random Forest algorithm helping us attain an accuracy of 86% with minimum error.

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An Effective Big Data Framework based on Farmer's Agricultural Context

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ABSTRACT-*In the recent years the Big Data technologies in agriculture presents a major challenge and also plays an important role in contributing effectively in many countries social and economic development. In this paper, we study the environmental data provided by precision agriculture information technologies which signifies a crucial source of data in essential of being wisely managed and analyzed with appropriate techniques and tools in order to extract the meaningful information. Also the main purpose of this work is to build an effective big data framework based of profile which assists the producers, consultants, researchers to make better decisions, enhance and monitor the agricultural productivity.*

Keywords: Big Data, Data Mining, Precision Farming, Prediction Analysis, Profiling System.

1. INRODUCTION

Big data is a term used to refer the data sets that are too large or complex for traditional data processing application software to adequately deal with Big data challenges.In the recent years, the huge volume of real time data in the agricultural sector and it need for an efficient and effective processing, stimulate the use of novel technologies and platform to acquire, store, process, analyze and visualize large data sets or future predictions and decision making. The stored data is analyzed and predicts the future condition in agriculture. It helps in order to meet the needs and requirements of various end users. Agricultural practices, in all their forms, are responsible of the considerable data quantity and they use a large number of external data to guide farmer decision.Farmer's predicting manually the demand of grains and vegetable so its effect to farmers economically to overcome this problem we are proposed machine learning auto demand and yield prediction process.Then the Admin will upload datasets to Hadoop Framework which contains crop data, crop demand data , crop yield data, Vegetable Demand data and Vegetable Yield data of the Previous 10 Years of Demands for the Vegetables and Grains in the Particular District. Next User will upload his PHANI Details of his Land Which Contains Aadhar number, Survey number, Total Land and Soil Type. After Comparing the Above Datasets with Testing Datasets using the Linear Regression Algorithm We Predict the Output Value for Predicting the Particular Crops to be Grown in the Specified .

1.1 Cloud Computing for Big Data Environment

Cloud computing is the ideal model for large data because of its endless scalability and resources used on-demand. It promises reliable services based on virtualized storage technologies. Resort to a cloud computing technology in agriculture can give considerable solutions to analysts and decision makers. Using the cloud, we can benefit from special bricks in Big Data management to collect and centralize data the maximum as possible regardless their sources, to make detailed analysis in order to obtain valuable data. This can be ensured by the use of new database models including mixed approaches between relational and non-relational (NoSQL)

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Cloud Based Soil Moisture Measuring System Using IOT in Indian Agriculture

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ABSTRACT: *The Internet of Things(IOT) is remodelling the agriculture enabling the farmers with the wide range of technologies such as precision agriculture and sustainable agriculture to face challenges in the field. IOT technology helps in collecting information about conditions like weather, moisture, water, temperature, fertility of soil, crop online monitoring enables detection of weed, level of farmers to get connected to the farm from anywhere and anytime. Wireless sensor network are used for monitoring the farm conditions and micro controllers are used to control and automate the farm processed. A Smart phone empowers farmer to keep updated with the on going conditions of the agricultural land using IOT at any time and any part of the world. IOT technology can reduce the cost and enhance the productivity of traditional farming.*

Keywords : cloud, firebase,internet of things, mobile application, soil moisture sensor

1. INTRODUCTION

Thegoal of IOT is to bring out a huge network by combing different type of connected devices. IOT in environmental monitoring helps to know about the air and water quality, temperature and conditions of the soil. Sensors are used to monitor different conditions of environment like water level, humidity, temperature etc….The wireless sensor nodes with wireless module based on node MCU protocol are used in designing the system. Database and android application is used to retrieve and store data. To enhance the productivity of the crop there by supporting and encouraging both farmers and country we need to use the appropriate technology which estimates the quality of crop. Soil moisture plays an important role in monitoring the environmental conditions. We proposes a system for measuring and monitoring soil moisture by interfacing low-cost soil moisture sensor with Node MCU. The two major modules are Moisture measuring system and Mobile application would be made user friendly. The moisture measuring system measures the content and stores in memory periodically. The content of the memory is accessed by the mobile application whenever required. when there is a fall in soil moisture, it would be altered through mobile application. The mobile application would be made generic for the other sensor and required security is provided at user level. And also cloud based platform is designed, so that any users can query soil moisture for any land resource through smart phones.

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Development of Predictive Model to Improve Accuracy of Medical Data Processing using Machine Learning Techniques

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ABSTRACT: *Data mining is nothing but the process of viewing data in different angle and compiling it into appropriate information. Out of the many software tools used for data evaluation, the one which is widely used is the data mining. Technically the data mining can be considered as the sequence of steps followed for searching patterns or identifying correlations between large numbers of fields within a huge relational database. Recent improvements in the area of data mining and machine learning have empowered the research in biomedical field to improve the condition of general health care. Within the medical data, the medical data mining searches for patterns and relationships which can provide useful information for appropriate medical diagnosis. Data mining techniques are applied to different medical domains to improve the medical diagnosis. Improving the accuracy of the classification and improving the prediction rate of medical datasets are the main tasks/challenges of medical data mining. Since the wrong classification may lead to poor prediction, there is a need to perform the better classification which further improves the prediction rate of the medical datasets. When medical data mining is applied on the medical datasets the important and difficult challenges are the classification and prediction. In this proposed work we evaluate the data mining techniques like Logistic Regression (LR), Artificial Neural Networks (ANN), Support Vector Machines (SVM) and Random Forest (RF) with Feature Selection Methods (FSMs) and Percentage Split (PS) as test option on Diabetes Datasets. The performance of the proposed hybrid model is measured in the form of classification accuracy.*

Keywords: BE: Backward elimination; CA: Classification Accuracy; EE: Entropy Evaluation; FSM's: Feature Subset Selection Methods; FS: Forward selection.

I. INTRODUCTION

Recent improvements in the area of data mining and machine learning have empowered the research in biomedical field to improve the condition of general health care. In many parts of the world the tendency for maintaining long-lasting records consisting of medical data is becoming an accepted practice. In addition to this,the newer medical equipment's and the techniques used in diagnosis, produces composite and huge data. Therefore, to handle these ill-structured biomedical data, intelligent algorithms for data mining and machine learning are required in order to take logical reasoning from the saved raw data, which is considered as medical data miningthe newer medical

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Blind navigation System using Hurdle Recognition

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ABSTRACT

Conventionally, visually impaired people use white cane or guide dog for travelling to desired destination. However, they could not identify their surrounding easily. In this paper we describe the development of navigation system which is applied to guide visually impaired people both indoor and outdoor environment. To provide an efficient navigation the navigation system is developed by using passive radio frequency identification (RFID) for indoor and object identification using Image Processing for outdoor environment. The navigation system is designed with voice commands which helps the visually impaired to have better experience, safer and comfortable travel. It also include a panic switch to alert the care taker if the individual is lost.

Keywords: RFID, Image Processing, Object identification, Panic switch.

1.INTRODUCTION

First understand what blindness means to a person. Blindness can mean different for different blind people because few people are blind from birth and few loose their vision due to some diseases gradually at a later stage. A person who is blind from birth can see nothing not even black because they do not know what black is. All they see is abyss becausethey have not seen anything ever to have a knowledge of what anything is. Approximately there are about 38 millions of people around the world in developing countries who are blind and visually impaired, among

them over 15 million are from India. Blind people feel they are an outcast from the rest of the society, Because of this inferior feeling blind people are takenback from societal activities and their participation in sports academics is also very limited. As a result the percentage of blind people who are unemployed is around two thirds of working-age visually impaired folks according to 2006 statistics.[2].

This project describes the event of navigation system that is applied to guide the visually impaired individuals at an interior and out of doors surroundings. to produce associate economical and easy navigation tools, a navigation device is developed by exploitation passive frequency Identification (RFID) transponders that square measure mounted on the ground like on tactile paving to make like RFID Networks .The developed navigation system is provided with a digital compass to facilitate the visually impaired individuals to steer properly at right direction particularly once turning method. This project is useful to visually impaired individuals as a result of the navigation device designed with voice commands can help them to possess a much better expertise, safer and cozy travel. Object sensors square measure enclosed during this project to find any object that is on the

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A Modern Real Time Water Quality Monitoring System Using IOT

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ABSTRACT: *Now-a-day, water pollution is one of the biggest fears for the green globalization. Water is used in various activities, such as consumption, agriculture and industry, which may affect water quality. Therefore, the water quality monitoring is necessary which includes several chemical parameters. Some of these are: pH, redox potential, conductivity, dissolved oxygen, ammonium and chloride ion amount. There is a need to improve existing system for monitoring water bodies, given that laboratory methods are too slow to develop an operational response and does not provide a level of public health protection in real time. Due to the vast increase in global industrial output, rural to urban drift and the over-utilization of land and sea resources, the quality of water available to people has deteriorated greatly. To increase the water quality, first we have to estimate the water parameters like pH, turbidity and temperature as the variations in the values of these parameters point towards the presence of pollutants. The water quality measuring system that we implement checks the quality of water in real time through various sensors (one for each parameter: pH, conductivity, temperature, turbidity). The Wi-Fi module in the system transfers the data collected by the sensors to the microcontroller and transfers the data to the smart phone/PC. This system can keep a strict check on the pollution of the water resources and be able to provide an environment for safe drinking water.*

Keywords — Redox potential, Turbidity, Microcontroller, Deteriorated, Pollutants.

I. INTRODUCTION

Globalization has been adversely effecting the environment through the challenges such as deforestation, climate change, pollution, bio-diversity loss and water resources. Globalization is theoretically refers to a complex process that includes political, economic and sociocultural changes. The rapid changes implemented in the manufacturing and the agricultural trends are immensely influencing water use as well as wastewater production patterns and the potential implications of these trends on the water quality. Various pollutants generated as byproducts in the production of plastics, synthetics, pesticides, detergents, pulp and paper, and other materials has posed a threat to water-quality and is conceivably a human health hazard if not regulated and managed properly. The continued growth of large-scale, corporate agriculture has implied to an extensive use of pesticides and fertilizers. The production levels of toxic wastes also are a concern to environmental quality, particularly as trade in toxic wastes increases. Hence the use of a system to independently measure the constituents of the water is essential.

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Generic Application for Sensors Application Using IOT

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ABSTRACT

IOT is the network of physical devices connected and controlled using smartphones via Internet. In our proposed system "Generic Application for Sensor Application using IOT" helps to fetch the data of the sensors to the mobile application which is connected through the Wi-Fi. Sensor value are stored in Arduino. Arduino consist of the Wi-Fi module which helps Arduino to connect with Wi-Fi. The mobile application that is connected with the same Wi-Fi then the data is fetched. This proposed system will be done with the android studio for application development while C++ programming will be used for the Arduino coding. This proposed system is proposed to help different government organization that helps in different testing like water purity, soil moisture, temperature. It can be used by normal people for different propose. This proposed system is forwarded to demolish the traditional way of testing or manual way of testing.

Keywords—Arduino, Internet of things, Mobile Application, Sensors, Wi-Fi .

1. Introduction

The future of our internet is Internet of things (IOT) where all devices are connected to the Internet. And all the physical devices can be controlled through the internet. Internet of things can be foreseen to be – a worldwide network of interconnected object uniquely addressable, based on standard communication protocols [1]. Identified by a unique address, anyobject including computers, sensors, RFID tags or mobile phones will be able to dynamically join the network, collaborate and cooperate efficiently to achieve different tasks. . Including WSNs in such a scenario will open new perspectives. Covering a wide application field, WSNs can play an important role by collecting surrounding context and environment information. Key enablers for the IoT paradigm are: RFID and WSN. RFID is well known and established for low-cost identification and tracking. WSNs bring IoT applications richer capabilities for both sensing and actuation. In fact, WSN solutions already cover a very broad range of applications, and research and technology advances continuously expand their application field. However, the sheer diversity of WSN applications makes increasingly difficult to define-typical requirement for their use in IOT [2].

The IoT allows objects to sense or control remotely around the existing network infrastructure and creates an opportunity for direct integration of physical world into computer based systems, and results in improving the efficiency, accuracy and economic benefits to reduce human intervention.[3]The revolutionary advances of

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AGRONOMY MONITORY ROBOT USING IoT TECHNOLOGY

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ABSTRACT

A Multitasking robot for the field of Agriculture has been studied in this research. Currently precision agriculture by agricultural robots is the newly emerging technology in the agriculture sector to save the time and energy that is wasted in repetitive farming tasks automation in farming processes is quite helpful. The Prototype of an agricultural robot"Agronomy Monitory robot" is modeled for multitasking such as seeding, cultivating and harvesting with a separate irrigation system. It is a quad-wheeled vehicle which is controlled by microcontroller as master controller, moisture sensor for irrigation, power supply is provided by battery.

***Keywords:* multitasking robot, sensors.**

I. INTRODUCTION

Agriculture is the backbone of India. The history of Agriculture in India dates back to Indus Valley Civilization Era and even before that in some parts of Southern India. Today, India ranks second worldwide in farm output. The special vehicles plays a major role in various fields such as industrial, medical, military applications etc., The special vehicle field are gradually increasing its productivity in agriculture field. Some of the major problems in the Indian agricultural are rising of input costs, availability of skilled labors, lack of water resources and crop monitoring. To overcome these problems, the automation technologies were used in agriculture. The automation in the agriculture could help farmers to reduce their efforts. The vehicles are being developed for the processes of cultivation, seed sowing, leveling, and water sprinkling. All of these functions have not yet performed using a single vehicle. In this the robots are developed to concentrate in an efficient manner and also it is expected to perform the operations autonomously. The proposed idea implements the vehicle to perform the functions such as cultivating, seed sowing, mud leveling, and water sprinkling. These functions can be integrated into a single vehicle and then performed.

II. PROBLEM STATEMENT

In the recent days, the technology has changed tremendously. Along with improvement in technology, the human must also cope-up with updating environment. In order to reduce human work the vehicles are evolved. The main drawback which the farmers are experiencing now is lack of advance mechanization in farming. Due to manual sowing of seeds distance between the seeds are not

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AUTONOMOUS VEHICLE WITH TRAFFIC DENSITY AVOIDNCE AND LIVE VIDEO STREAMING USING ARTIFICIAL INTELLIGENCE WITH EMBEDDED C

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ABSTRACT

Autonomous car is the newest Technology. In driver based car there are more human error which causes the more amount of accident rates so this concept helps to decrease the human error which lead to accidents.

Keywords: ***sensors, transmitter, receiver***

I. INTRODUCTION

The autonomous car is one step towards smart city and is applicable for all the handicap people especially blind people and is suitable for all day to day transport activities. The motive behind the whole concept of the driverless car was to avoid accidents that take place now days in large numbers.

Fuel conservation can be done at maximum by efficient driving techniques and speed limits Strict obedience of traffic rules especially in India as many of the human drivers ignore and neglect the traffic rules such as not following of traffic signal lights, improper lane keeping, not following of speed limits especially in city areas, blowing horns in horn restricted areas such as near educational institutes and organizations etc. Efficient use of parking space can be achieved using autonomous cars as they include automated parking algorithms and sensors to avoid collision with other parked vehicles which will in turn increase space for parking. There is an increased demand for these cars in India itself. This is due to the careless attitude of drivers (in the city, as well as on highways and mountain passing).

II. PROBLEM STATEMENT

The purpose of this project is the creation of an autonomous car which should be able to drive automatically without any driver in the urban areas by following the Road traffic rules with live video streaming along with zonal speed control.

III. PROPOSED SYSTEM

- Here we design a system that overcomes the drawbacks of all the aforementioned systems.
- Our main focus was on Following Vehicle, which detects and avoids obstacles, coordinate with live video streaming, and follow the route.
- . For another application, it checks vehicles around and automatically moves slowly behind the traffic until it gets out of traffic jam situation.
- When the vehicle enters in the normal area it speed does not decrease and it goes normally no action is performed. When the vehicle

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SpideRR-COLLEGE NETWORKING APPLICATION

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ABSTRACT

SpideRR-College Networking Application is both website as well as mobile application development project. Currently, in our college, R.R.I.T there is no networking website or application exist which will connect students as well as teachers. Now-a-days it's an important to have such connections between students as well as teacher. This project has a user-Friendly interface for both android app as well as the website and requires human interaction. This project will have different functionalities like login, signup, different view for students and admin, post, creating projects, students can mention their problems using forum help, HODs can publish notice to their particular department, chat system within project members, etc. we are trying include all the courses available in RRIT like Engineering, Nursing, Pharmacy, Diploma, Management, etc.

Keywords: Networking, Mobile Application

1 .INTRODUCTION

About our networking System-SpideRR

College Networking is both website as well as mobile app development project. Currently, in our college, R.R.I.T there is no networking website or application exist which will connect students as well as teachers. Now-a-days its an important thing to have such connections between students as well as teacher.

This project is user-Friendly and requires human interaction. This project will have different functionalities like login, signup, different view for students and HODs, post, like, comment, creating events, students can mention their problems, HODs can publish notice to their particular department, student review, chat system, etc. we are trying include all the courses available in RRIT like Engineering, Nursing, Pharmacy, Diploma, Management, etc. We will need college API for this project to validate a student so that no unauthorized students can use college networking.

We have many existing Networking system the communication, the following contains some information of these systems

1.1 Firebase

Firebase evolved from Evolve, a prior startup founded by James Tamplin and Andrew Lee in 2011. Evolve provided developers an API that enables the integration of online chat functionality into their websites. After

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Comparative Performance of Machine Learning and Deep Learning Algorithms on Imbalanced Handwritten Data

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Abstract

Now the days Imbalanced data are one of main task in a classification by machine learning. Data missing produces missthe relevant relations between featuresoutput of a model regardless how recent the technology is. However, deep learning algorithms, such as deep belief networks showed well results in many cases, especially in image processing. So, in this paper, we review the data disparity in many cases using deep belief networks model and compare it with machine learning algorithms, within help of MNIST handwritten dataset. Here it shows stable and suitable for multiple cases, the imbalanced data still managed by effect of the outcome of the conventional algorithms of machine learning.

Keywords—Deep belief networks, support vector machine, back propagation neural networks, imbalanced handwritten data, classification.

I.INTRODUCTION

Imbalanced classes in a samples occurs when the sample dataset is not in the same of values among the parameters. The major class of the sample was when the class has the most instances. The minor class of the dataset was when the class has the least instances. An imbalanced class data in a classification are takes the over fitting class model and wrongly classified. Over fitting is a result of accuracy produces miss the relevant relations due to overwhelming values in one class compared to missing data of another class. This model might be give a high accurate result, but it is classified into many overwhelming class.

This approach will be focused on this paper is a review on missing values and effects of disparity class in a handwritten sample through the deep learning and machine learning algorithms. Deep learning is a part of machine learning algorithms that are recently introduced to solve complex, high-level abstract and heterogeneous datasets, especially image and audio data. There are several types of deep learning architectures, which are deep neural network (DNN), convolutional Neural Network (CNN), deep belief networks (DBN) and convolutional deep belief networks (CDBN). In this paper, we will focus on two deep learning algorithms, which are CNN and DBN. CNN is composed of one or more convolutional layers with fully connected layers at the end of it. A deep belief network (DBN) is a probabilistic, generative model made up of multiple layers of

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ONLINE VARIATIONAL INFERENCE FOR THE HIERARCHICAL TOPIC DETECTION FRAMEWORK

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ABSTRACT
Hierarchical topic detection model have achieved big success in detecting topics . previously developed models have some of the dis advantages such as most of the developed models run with less number of topics and the overlaps between the topics may enlarge in the evolving process. Hierarchical topic model is a candidate solution to these problems since it can reveal many useful relationships between the topics. These relationships can help to find high quality topics and reduce topic overlaps. In this paper, a knowledge-based semi supervised hierarchical online topic detection framework is proposed. The proposed framework can detect topics in an online hierarchical way. In addition, it has been proven that introducing external knowledge can improve the performance of text mining. Therefore, the knowledge from external knowledge sources and human experts are also integrated in the proposed framework. Experiments are conducted to evaluate the proposed framework with different metrics. The results show that compared with the baseline methods, our framework can achieve better performance with competitive time efficiency.

Keywords: Distance metric learning , Hierarchical matrix factorization , Latent Dirichlet Allocation, Online topic model.

I. INTRODUCTION

Data mining is the practice of automatically searching large stores of data to discover patterns and trends that go beyond simple analysis. Data mining uses sophisticated mathematical algorithms to segment the data and evaluate the probability of future events. Data mining is also known as Knowledge Discovery in Data (KDD). Data mining can answer questions that cannot be addressed through simple query and reporting techniques.

Online text stream Topic Detection and Tracking with Semi-supervised Learning With the rapid growth of web data, a large amount of text streams are available online. However, how to organize them for facilitating users' experience and government supervision remains a problem yet to be seriously investigated. Topic detection and tracking, which has been a hot research topic for decades, could cluster web videos into different topics according to their semantic content. However, how to online discover topic and track them from web videos and images has not been fully discussed. In this paper, we formulate topic detection and tracking as an

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Efficient Secure Data Sharing In Mobile Cloud Environment Using Light Weight Encryption

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ABSTRACT:

The data security problem are becomes more grievous and intercept in the development of mobile clouds. In the mobile clouds there many research are done to improve the mobile cloud security. But many clouds are not supporting to the mobile services since mobile devices has limited power and computing resources. To find the solutions to mobile cloud applications with low computational overhead is important task. In this research paper, we proposed LDSS technique to solve this issues for mobile cloud computing It adopts CP-ABE, an access control technology used in normal cloud environment, but changes the structure of access control tree to make it suitable for mobile cloud environments. LDSS moves a large portion of the computational intensive access control tree transformation in CP-ABE from mobile devices to external proxy servers. . The experimental results show that LDSS can effectively reduce the overhead on the mobile device side when users are sharing data in mobile cloud environments.

Keywords: Mobile cloud computing,data encryption,access control,user revocation

[1] INTRODUCTION

Cloud computing is the use of computing resources (hardware and software) that are delivered as a service over a network (typically the Internet). The name comes from the common use of a cloud-shaped symbol as an abstraction for the complex infrastructure it contains in system diagrams. Cloud computing entrusts remote services with a user's data, software and computation. Cloud computing consists of hardware and software resources made available on the Internet as managed third-party services. These services typically provide access to advanced software applications and high-end networks of server computers.

1.1 Benefits of cloud computing

Consumers and organizations have many different reasons for choosing to use cloud computing services. They might include the following:

- Convenience
- Scalability
- Low cost
- Security

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Predicting Multiple Diseases Using Machine Learning Techniques

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Abstract

One of the challenges of healthcare outcome is aggregating disparate which represents large amount of asynchronous data source into meaningful indicators of each person. However in this paper we demonstrate that XGBoost classifier is more interpretable than the deep learning models for disease prediction. Additionally, in our work we provide survey of various machine learning algorithm such as Naive Bayes and KNN for disease prediction tasks.

Keywords: Machine learning, Naïve Bayes, KNN and Disease prediction.

I.INTRODUCTION

Nowadays approximately 7.5 millions of people are suffering from health issues such as heart disease, diabetes and chronical kidney diseases etc this has been caused many to consider the possibilities of designing disease detection systems and automated clinical support system. In the past studies, patient laboratory tests, diagnoses and medication were used to predict the diseases. Using this type of model it improves sensitivity, specificity of detecting the disease and to identify potentially unknown risk factors. By using the various methods such as Support Vector, random forests, neural network, time series modelling and logistic regression techniques the diseases have been predicted in recent studies. Deep learning methods (artificial neural network) have been successful in offering insight to both diagnosis and data representation. In our case we are using Naïve Bayes and KNN (K- Nearest neighbour) algorithm for predicting the diseases. The objective of this work is to predict the diagnosis of different type of disease.

II. LITERATURE SURVEY

[1] D. Kartchner, T. Christensen, J. Humpherys, and S. Wade in 2017 IEEE International Conference on Healthcare Informatics (ICHI). "Code2vec: Embedding and clustering medical diagnosis data," Identifying disease comorbidities and grouping medical diagnoses into disease incidents are two important problems in health care delivery and assessment.Using vector space embedding's produced using the Global Vectors (GloVe) algorithm, it is able to find useful vector representations of diagnosis codes that can identify related diagnoses and thus improve identification of related disease incidents.

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Smart Garbage Monitoring System using IoT

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ABSTRACT: *As the world's population is growing at a fast pace, more and more waste is produced daily and waste management becomes a more crucial matter and concern. Most important is the collection of solid waste from city garbage bins. Inadequate or inefficient collection processes lead to undesirable and in some cases unsanitary conditions that pose a health risk to the surrounding communities. Such risks are presented in the form of overfilled garbage bins and foul odors'. There is lack of planning, data on the collection, and poor infrastructure for the collection of waste and for the waste management. To provide solution to this Smart Garbage Monitoring System is proposed. The system will allow the authorities to better manage, plan, & utilize their resources for garbage collection also hygiene & cleanliness can be maintained.*

Keywords: Internet of Things (IoT), Smart Garbage Collection, Waste Management.

1. INTRODUCTION

With the popularity of the Internet of things (IoT) growing, and the availability of low cost actuators and sensors, the approached method aims to monitor the bin whether it is full or half filled or empty and proposed method[1] will calculate the sensor levels in bin and data will be sent to the mobile application second to second. The first sensor will measure the level of waste in the dustbin located all over the city in different locations. The data collected by the sensor is then sent to Arduino and to the cloud, the output data i.e. the level of dustbin is then showed in the application when the end user logs into the application [2]. A notification pops up in the application whenever a dustbin of a particular location is full. An E-Mail is also sent to the end user stating, the dustbin is full. The second sensor measures the distance of hand of the person whenever a person comes near the dustbin to throw waste. If the distance of hand from the dustbin is less than 40cm then the servo will open the lid of the dustbin and when the distance of hand is more than 40cm then the dustbin's lid will close or will remain closed.

II. LITERATURE SURVEY

[1]The paper highlights that the collection, transport and disposal of solid waste, which is a highly visible and important municipal service, involves a large expenditure but receives, scant attention. This problem is even more crucial for large cities in developing countries due to the hot weather. A constructive heuristic which takes into account the environmental aspect as well as the cost is proposed to solve the routing aspect of garbage collection. This is based on a look-ahead strategy which is enhanced by two additional mechanisms. Interesting results were obtained when tested on instances with and without the presence of the effect of the environment.

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Cloud-based Android Application with NFC for Remote access

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Dipendra Kumar Mahato

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RR Institute Of Technology , VTU

ABSTRACT: *This type of access to the clients can provide relief to the owner who is handling organisations atmultiple location in order to handle the security of his firm from his phone or web application.However IOT has made it possible to handle the different functionalities of the sensors using this technology,but the technology we are using in this domain if NFC.Which allows the owner to give the acess to the authorize client only who can use the service efficiently.This topic consist of a combination of both IOT and Aritificial Intelligence.In this paper we introduce the suitable technology and ideas to be implemented for some of the startups and organisation that are going trending now. When it comes to staff hiring in a company it requires a lot of human resource to be implemented .The paper includes methodology used by SWIGGY,VOGO.NFC.*

Keywords: NEAR FIELD COMMUNICATION, GPS, ARTIFICIAL INTELLIGENCE,IOT.

1.INTRODUCTION:

The topic chosen for the advancement of the various methodologies in the same paper.The paper focuses on implementation IOt,Artificail Inteliigence and GPS methodologies in the same domain.The companies like SWIGGY,VOGO are using the technologies in which the control is in individual hand to operate the functionalities using IOT .we can implement this idea using NFC technology.We are trying to provide accessibility to the different user by the authorized person who is present in remote place.NFC allows the individual to aces the service provided by the companies anywhere,anytime.As per statistics of the advancement in technology we found that we can make the efficiency of working of some sensors to the greater extent which is robusy and reliable to use.

2. Methodology:

This paper includes the process of how the office can be managed from the remote place in order to make it more secure and reliable to use the application.The methodology introduced here will be reducing the labour cost and requires less human resource or negligible.

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FABRICATION OF SOLAR AIR COOLER

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ABSTRACT

Mechanical Engineering without production and manufacturing is meaningless and inseparable. Production and manufacturing process deals with conversion of raw materials inputs to finished products as per required dimensions, specification and efficiently using recent technology. The new developments and requirements inspired us to think of new improvements in air conditioning Engineering field. Nowadays air cooler is available in market. In our project, solar power is stored in a battery. This power is used to run the air collar whenever we required. Solar energy means all the energy that reaches the earth from the sun. It provides daylight makes the earth hot and is the source of energy for plants to grow. Solar energy is also put to two types of use to help our lives directly solar heating and solar electricity. Solar electricity is the technology of converting sunlight directly in to electricity. It is based on photo-voltaic or solar modules, which are very reliable and do not require any fuel or servicing. Solar electric systems are suitable for plenty of sun and are ideal when there is no main electricity. Our objective is to design and develop a solar system normally "solar air cooler".

Keywords: Solar Panel, Battery, DC Fan, Water Pump.

1.INTRODUCTION

Human beings give off heat, around an average of 100 kcal per hour per person, due to what is known as „metabolism" . The temperature mechanism within the human body maintains a body temperature of around 36.9 degree C (98.4degree F). But the skin temperature varies according to the surrounding temperature and relative humidity. To dissipate the heat generated by metabolism in order to maintain the body temperature at the normal level, there must be a flow of heat from the skin to the surrounding air. If the surrounding temperature is slightly less than that of the body, there will be steady flow of heat from the skin. But is the surrounding temperature is very low, as on a cold winter day the rate of heat flow from the body will be quite rapid, thus the person feels cold, on the other hand on a hot summer day, the surrounding temperature is higher than that of the body, and so there cannot be flow of heat from the skin to the surroundings, thus the person feels hot. In such a situation water from the body evaporates at the skin surface dissipating water from the body evaporates at the skin surface dissipating the heat due to metabolism. This helps in maintaining normal body temperature. But if the surrounding air is not only hot but highly humid as well, very little evaporation of water can take place from the skin surface, and so the person feels hot and uncomfortable

2. OBJECTIVE

To make aware of non conventional energy sources to reduce environmental pollutions. This product preferably suitable for villages, because they face lot of power cut problems in summer (around 12 to 14 hrs in day). And for offices and schools which runs in day to which save energy. As air-conditioning and refrigeration consumes more power and mainly cost of refrigerating and air conditioning products are very high. So would like develop product which runs by solar energy and provide cooling effect for house hold food items at lower cost.

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Composite Leaf Spring for Automobile Suspension System-A Review

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Abstract

This review is a basic comprehensive source for design and analysis of a leaf spring using different composite materials. Leaf spring in automobile play a very important role in suspension system to absorb the road shocks, which are developed during the vehicle motion. Presently in automobile steel leaf springs are widely used, lot of research is in progress towards the replacement of the existing steel leaf spring with composite leaf spring to have better weight to strength ratio and improved mechanical properties like tensile strength, compressive strength, flexural strength, impact strength and stiffness. The use of composite material for leaf spring helps in reduction of weight without any reduction in load carrying capacity. The composite materials used in research work are E-glass/Epoxy, Carbon/Epoxy. Graphite/Epoxy, Boron/Aluminium and Kevlar/Epoxy.

Key words:Automobile, Composite,Leaf spring, Strength, Weight.

I. Introduction

The main function of the leaf spring in automobile suspension system is to absorb the road shocks to safeguard the occupants, vehicle components and also the stability of the automobile in rolling and pitching during the motion. In addition to road shocks it also carries lateral loads, driving and braking torques. Leaf spring assembly consists of a number of leaves, the leaves are varying in length. The longest leaf has eyes on both ends are called as master leaf. All the other leaves are bound together with the help of strips. One end of the spring is mounted on the frame of the automobile chassis with simple pin, which is fixed. While other end is connected to the frame with shackle. The shackle accommodates change in length of the spring, when it deflected due to upward movement of the wheel, when it crosses the projection and irregularitieson the road surface.

Presently the steel is used as a material for leaf spring, which is accountable for 10-20% of unsprung weight. The automobile manufacturers are now looking to reduce the unsprung weight with the replacement of steel spring using composite material without reduction in load carrying capacity, better weight to strength ratio and improved mechanical properties like tensile strength, compressive strength, flexural strength, impact strength

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Design and Fabrication of Solar Robotic Trolley for Material Handling

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ABSTRACT:

Material handling robot for multi stations is a mobile robot used in industrial applications to move materials around a manufacturing area or a warehouse. Proximity Sensor, DC Motor, Wheel and Material handling vehicle are the main blocks in this project. Here we use proximity sensor to handle a material and to replace it at a particular place in for our requirement. For this purpose we use visitor guided vehicle. A motor is attached with the vehicle wheel for moving purpose. The motor gets power through control unit. The proximity sensor detects the positioning plate and gives the output signal to the control unit and it activates the relay. The motor runs when the relay is on. When the vehicle reaches a particular place the reader detects and alarm is activated.

Keywords: Material Handling Robot, Solar Panel, Arduino Lm 328, HC05 Bluetooth, Proximity sensor.

I. Introduction:

Material handling is the essence of industrial robotics with most robotic applications falling within this category. End-users deploy robots to improve throughput, quality, flexibility and consistency while decreasing ergonomic hazards for workers, scrap and the need for additional conveyance systems in manufacturing and warehouse distribution centers. Robots are increasingly called on to handle material ranging from blood samples to entire vehicles during the manufacturing process. “Consumers are more cautious about consistency and quality. Market demands change daily and the ability to adapt to changes in products and packaging is essential,” says Shishir Rege, Packaged Goods Product Marketing Manager at the Motoman Robotics Division of Yaskawa America Inc. (Miamisburg, Ohio). “Manufacturers need adaptability for mass customization so they invest in robotics to become more efficient. Robotics help in quick changeovers from one product to the next can handle a high mix of products and adjust to throughput demands.”Material handling is a series of methodologies that we employ to control the transfer of materials or components from process to process. It can also be adapted to be a process, such as a walking beam, that locates and transfers with high precision, such that a process may be superimposed on single or multiple stations. A traditional dial table would fall into this category.

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Natural Fibers Reinforced Polymer Composite Materials – A Review

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Abstract:

Natural fiber reinforced polymer composites are the substance in which natural fibers are employed to reinforced by means of polymer matrix so as to improve its mechanical properties. These are environmental friendly, cost effective natural fiber,eco-friendly, reduced cost and effortless manufacturing have encourage researchers global to try nearby available inexpensive fiber and to study their probability for reinforcement purposes and to what extent this natural fibers justify the essential specifications of excellent reinforced polymer composite for Industrial, Automotive, Aerospace,packaging, Medical and Structural applications. Latest trends in natural fiber development are genetic engineering. In composites,technology offer substantial opportunities for enhanced materials becauseof renewable resources with superior support for universal sustainability. In comparison with conventional composites, Natural fiber composites have ecological advantages and lesser density, thushave smarterapplications in various industry. Due to non-carcinogenic and bio-degradable nature of these composites, higher focus on Natural fibers is gained during present scenario.

Natural fibers need to be treat chemically to improve interfacial adhesion between fiber surface and polymer matrix. The chemically treated natural fibers show better progress in properties than untreated fibers. This can be recognized to the removal of waxy layer from the surface of natural fibers and thus making it rougher. Natural fiber reinforcements have contributed in improved impact toughness and fatigue strength. Many efforts have been made by researchers towards enhancing mechanical properties. This journal focuses up on properties of the natural fibre reinforced polymer composites along with its relevance.

Keywords: Chemical treatment, Mechanical Properties, Natural fiber, Polymer Matrix, Reinforcement.

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FABRICATION OF ROV DETECTING THE FOREIGN BODIES IN UNDER WATER

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ABSTRACT

Remotely operated underwater vehicles (ROVs) are remote control underwater robots driven by an individual on the surface. These robots are tethered by a series of wires that send signals between the operator and the ROV. All ROVs are equipped with a video camera, propulsion system, and lights. Other equipment is added depending on the specifications required. These include a manipulator arm, water sampler, instruments that measure clarity, light penetration, temperature, and depth. Team Aquabot intends to recreate such ROV in order to fulfil a specific mission involving four separate tasks.

Keywords: *under water vehicle, camera, armoured cable, water proof technology, servo motors.*

I. INTRODUCTION

A remotely operated underwater vehicle (ROV) is a tethered underwater mobile device. This meaning is different from remote control vehicles operating on under water. ROVs are unoccupied, highly manoeuvrable, and operated by a crew either aboard a vessel/floating platform or underwater. They are common in deep water industries such as offshore hydrocarbon extraction. They are linked to a host ship by a neutrally buoyant tether or, often when working in rough conditions or in deeper water, a load-carrying umbilical cable is used along with a tether management system (TMS). The TMS is either a garage-like device which contains the ROV during lowering through the splash zone or, on larger work-class ROVs, a separate assembly which sits on top of the ROV. The purpose of the TMS is to lengthen and shorten the tether so the effect of cable drag where there are underwater currents is minimized. The umbilical cable is an armoured cable that contains a group of electrical conductors and fibber optics that carry electric power, video, and data signals between the operator and the TMS. Where used, the TMS then relays the signals and power for the ROV down the tether cable. Once at the ROV, the electric power is distributed between the components of the ROV. However, in high-power applications, most of the electric power drives a high-power electric motor which drives a using motor. The pump is then used for propulsion and to power equipment such as torque tools and manipulator arms where electric motors would be too difficult to implement subsea. Most ROVs are equipped with at least a video camera and lights. Additional equipment is commonly added to expand the vehicle's capabilities. These may include sonars, magnetometers, a still camera, a manipulator or cutting arm, water samplers, and instruments

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"EXPERIMENTAL AND NUMERICAL INVESTIGATION OF HEAT TRANSFER COEFFICIENT FOR HELICAL COILED HEAT EXCHANGER"

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ABSTRACT

Helical coil heat exchangers are widely used in applications requiring large heat transfer area per unit volume. In present work, CFD simulationof helical coiled heat exchanger has been done. The diameter coil of heat exchanger has been varied along with mass flow rate. Water at 332K has been considered at inlet. Parameter such has temperature drop, heat transfer rate, heat transfer coefficient and Nusselt number have been found out and compared for the geometric variations and variation in mass flow rate. It has been found out that temperature drop decreases for decrease in diameter of coil and also for increase in mass flow rate whereas heat transfer increases with increase in coil diameter and mass flow rate.

INTRODUCTION

- A heat exchanger is a device that transfers thermal energy from a high-temperature fluid to a low-temperature fluid with both fluids moving through the device.
- These requests may arise as a result of the need to increase process throughput, increase profitability, or accommodate capital limitations. Processes which use heat transfer equipment must frequently be improved for these reasons.

The present study the experiments are carried out Heat Transfer Enhancement for Double Pipe Heat Exchanger Using helically coiled heat exchangers In this research work investigation of heat transfer from hot water to cold water in helically coiled double pipe heat exchanger and the behavior of the heat transfer coefficient which is a

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AN EXPLORATION OF BIOGAS FOR SUSTAINABLE ENERGY

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Abstract

Biogas is renewable energy source for emerging energy crisis. It can be exploited directly as a fuel or as a raw material for the production of gas. Methane (CH4) and carbon dioxide (CO2) are the main constituents of biogas and some small traces of undesirable compounds such as hydrogen sulfide (H2S), ammonia (NH3) and siloxanes are also present in biogas which can be separated for better usage of biogas.Due to resource depletion like fossil fuels and climate change, lipid-based algal biofuel has been pointed out as an interesting alternative because of the high productivity of algae. In this review study the technological advances in biogas synthesis and extraction, their methodology, results were focused to implement the same on upcoming energy crisis to fulfill the energy demands.

Keywords:Biogas, Anaerobic digestion, Methane, algal methane, oilcakes

I. INTRODUCTION

Biogas production through anaerobic digestion (AD) is an environmental friendly process utilizing the increasing amounts of organic waste produced worldwide. A wide range of waste streams, including industrial and municipal waste waters, agricultural, municipal, and food industrial wastes, as well as plant residues, can be treated with this technology [1].

In Anaerobic digestion process biodegradable organic matters are break down by microorganism in absence of oxygen, which leads to produce biogas. Organic matters are kitchen waste, manure from cattle,agriculture,sewage, poultry dropping etc. India is facing many problems on issue with energy. At present coal is the major energy production source inIndia. During the last couple decades, India has experienced manifold increase in energy use since demand is high with increasing population .According to International Energy Agency (2016), almost 82% people of India have electricity connection in. In India Almost 66% of the Indian population depends on traditional biomass for cooking purpose, whereas, the percentage of population

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A REVIEW ON INVESTIGATION OF MICROSTRUCTURAL ANALYSIS OF DUPLEX STAINLESS STEEL

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ABSTRACT

Duplex stainless steels are the most recent family of stainless steels developed in the 1960's. Duplex stainless steel is one of the fastest growing material in the field of steels. It is an exiting area of interest for researchers, stainless steel producers, fabricators and end users. They present very diversified technical challenges and simultaneously attractive in-service properties at excellent cost/properties ratios, particularly in critical markets including oil and gas, chemical industry, pulp and paper industry, water systems, desalination plants, pollution control equipments, chemical tankers, etc.

Keywords: Corrosion resistance, Deformation, Hardness, Microstructure, Temperature.

INTRODUCTION

Stainless steels are alloys which containing 11% of chromium by weight. They have very good corrosion resistance property compared to other steels because of chromium oxide coated on the surface of stainless steel. The more the chromium oxide is added the corrosion resistance property will be higher. Stainless steels can be classified into five groups based on their microstructures ferritic, austenitic, martensitic, duplex and precipitation hardening stainless steels.

Ferrite and austenite are in equal proportions in Duplex stainless steels which have much better corrosion resistance and mechanical properties compared to single phase stainless steels. They even provide good resistance to chemical environment. These are the steels with higher strengths which can be used as alternatives for similar single phase austenite and ferrite steels. These steels are duplex in nature of d-ferrite and austenite. The 2205 duplex stainless steel has higher ferritic structure at about 1300°C because its volume fraction increases at higher temperature. The duplex structure of these alloys under hot working temperatures could change hot deformation behavior.

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A REVIEW ON MECHANICAL PROPERTIES OF DUPLEX STAINLESS STEEL

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ABSTRACT

A review is made on tests conducted on specimens of Duplex stainless steel. The review focuses light on study of sensitization and corrosion by the different authors for governing sensitization and corrosion in duplex stainless steel by using different welding processes. Besides the difficult of little ductility and low hardiness of duplex stainless steel, welds due to the microstructure features of the weld division as a outcome of weld heat contribution rate and heat transfer rate feature, susceptibility to intergranulated corrosion triggered by the reduction of the chromium content of the weld atmospheremainly in the HAZ is a most important concern.Controlling the completedistribution of the material in convinced engineering application irrespective of its beautiful economics shared with reasonable strength and brilliant corrosion features of AISI 409 M. Duplex stainless steel throughout welding (TIG,MIG, and SMAW) has explored. Its sensitization and corrosion was able to be evaluated by chemical experience of the weld cross segment. Then the features of sensitization and corrosion can be studiedby Scanning Electron Microscope. This review settled that difference in heat involvement resulted in significantvariations in the mechanical properties of the weld which marks on the sensitization and corrosion.

Keywords-Duplex stainless steel, corrosion, mechanical properties, Sensitization, tensile test.

1. Introduction

Stainless steels are alloys of iron having at least 11% chromium by weight. They show superior corrosion resistance related to other steels mainly due to the inactive film of chromium oxide which forms on the surface. However, in order for a stainless steel to maintain its stainless-ness in destructivechemical environments, more amounts of chromium must be added to the alloy (Lippold and Kotecki 2005) [1]. In adding to chromium, other alloying elements such as nickel, molybdenum, manganese, nitrogen etc. are correspondingly added in order to deliver better opposition to different methods of corrosion. Several alloying elements arealso added to improve mechanical properties and weld ability without negotiating on the corrosion resistance (Ki Leuk Lai *et al.* 2012) [3]. Stainless steels can be categorized into five groups based on their

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A REVIEW ON WEAR ANALYSIS AND OPTICAL MICROSCOPY OF SUPER DUPLEX STAINLESS STEELS

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ABSTRACT

Super duplex stainless steels (SDSS) have high corrosion resistance because of their high contents of chromium, nickel, molybdenum and nitrogen but low wear resistance. To improve the wear resistance of these steels without affecting their corrosion resistance, samples of SDSS were treated by plasma ion nitriding at temperatures ranging from 350 °C to 570 °C for two hours. This thermochemical treatment resulted in the formation of different types of nitrides that affected the microhardness, the microwear behaviour and the corrosion resistance of the metal surface. The microwear resistance decreased at 400 °C because different nitrides formed on the surface, thereby increasing the hardness and volume wear resistance of the steel. The test results showed that the alloys that were nitrided at 400 °C and 450 °C exhibited the highest corrosion resistance to a solution medium containing chlorideions.

The aim of the present work is to focus on the characterization of materials in situ by using a modified near- field scanning optical microscope (NSOM) with a home- built tuning fork head that allowed us to obtain optical imaging concurrently with topography of some systems. The first example is related to finding precursor sites for pitting corrosion on duplex stainless steels (DSS). Precursor sites for pitting on DSS were found to be inclusions that are complex in structure and where metastable pits develop at temperatures below the critical pitting temperature (CPT), but where stable pits, with large corrosion current, occur at the CPT. These inclusions were analyzed and found to be inhomogeneous in nature and consisting of a mixture of various elements (Si, Al, Mg, Ca, Ti, Mn, and S). After analysis of the particles, in situ observation of the particles in 3.5% NaCl and HCl solutions showed that they developed metastable pits. The pits and corrosion products developed in both particles present in the austenite grains and in particles contained within the ferritematrix.

Keywords: Corrosion, Expanded austenite, Microwear, Tribological, Optical microscope, Austenite.

1. INTRODUCTION

The demand for wear- and corrosion-resistant components has stimulated growing interest in surface engineering as a means of enhancing the tribological and tribochemical properties of surfaces. Surface and

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A REVIEW PAPER ON FIBRE REINFORCEMENT COMPOSITE

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Ananthprasadjain B R, Meghashree B J

ABSTRACT

The properties of fibre was the most useful technique in the improval of the other material when reinforced with the materials . natural fibres and other fibres are used as the different reinforced composites provide strength and rigidity the term composite may also describe newer technological products made from very strong fiborous materials. The matrix material can be polymeric matellaic ceramic or carbon. When the fibre reinforced into the matrix to form a composite they retain their individual characterstics and both have influence on composites final properties . today the most common man made compsites can be divided into three main groups (PMC's) (MMC's)and (CMC's)

1 INTRODUCTION

Natural fibres are fibres that are produced by plants animals, and geological processes. They can be used as a component of composite materials, where the orientation of fibers impacts the properties. Natural fibers can also be matted into sheets to make products such as paper, felt or fabric Natural Fibers are among the lightest (with densities below 1.2 -1.45 gm/cc) of any known fibers, that can provide reinforcement capable of imparting high specific mechanical properties to a composite made out of them when compared to those made of many man-made fibers like glass, carbon and kevla used in advanced applications made of polyurethane reinforced with a mixed flax/sisal material. Toyota developed an eco-plastic made from sugar cane and will use it to line the interiors of the cars

1.1**PRODUCTION**Wool forms the protective covering of sheep screening them from heat and cold, and allowing them to maintain even body temperatures. Silk is a continuous protein filament spun by the silkworm to form its cocoon Perhaps no other natural product has influenced the destiny of humankind as has cotton. It has clothed nations, enslaved men and women, monopolized labor, and given direction to entire industries. Leaf fibers come from the leaves of mono cotyledonous plants. They are primarily used for cordage Bast fibers come from the bast tissue of plant stem. They are primarily used for textiles thread, yarn, and twine. Miscellaneous fibers come from the sheathing leaf-stalks of palms stem segments, stems, and fibrous husks. They are used primarily for brush and broom bristles, matting, and stuffing.

1.2TYPESVegetable fibre: bast fibres, leaf fibres, seed and fruit fibres animal fibres: wool and filament fibres Minera fibres asbestos Regenerated fibres: rayon fibres , polysonic fibres. fibres Synthetic fibres : polyster fibres, acryclic fibres, nylon fibres ,vinlyon fibres, benzoate fibres ,aramid fibres Inorganic fibres; glass fibres ,metallic fibres ,carbon fibres

1.3APPLICATIONS Natural fibers reinforced composites are emerging very rapidly as the potential substitute to the metal or ceramic based materials in applications that also include automotive, aerospace, marine, sporting goods and electronic industries The German auto-manufacturers, Mercedes, BMW, Audi and Volkswagen have taken the initiative to introduce natural fiber composites for interior and exterior application so natural fibre composites are in automotive sector there are additional fields of applications of natural fibre composites mainly: textiles, medical, healthcare and pharmaceuticals, home and personal care, food and feed additives, construction and furniture, packaging, pulp and paper , bio energy and bio fuel

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SOLAR POWERED AUTOMATIC COW DUNG CLEANING SYSTEM FOR COWSHED

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ABSTRACT

In today`s scenario farmers are having hard time in maintaining the cow shed to clean the cow dung they have to spend more time or they have to hire workers for more money. So in this paper we suggest a mechanism which is used to collect the cow dung and also used to clean the area. We use cow dung cleaning machine which runs under the power generated by solar. By using this process automatically human power will be saved.

Keywords:-Microcontroller, limit switches, dc motor, dc pump, solar panel, battery.

I. INTRODUCTION

Traditionally cow dung has been used as a fertilizer, though today dung is collected and used to produce bio gas and many application. In today`s days farmers are having hard time in maintaining the cow shed because of less time and lack of man powered. To clean cow dung they have spent more time. So we suggest this mechanism is used to solar powered automatic cow dung collecting cum cleaning system. In this system we have used controller system to collect the cow dung. They are mechanical and electrical components are used in this project such as limit switches, DC motor, DC pump, microcontroller, and drag, rack and pinion.

II. LITERATURE REVIEW

1. “Solar powered automatic cow dung collection com cleaning system” by dinesh r, balakrishnaa k, saseedharan k, sukumarr.In this research they include various component to perform the machine automaticallu with the use of limiting switches which is controlled by AT89S52 microcontroller and is powered by solar energy

2. “Automated customised cowshed cleaning system” by gurucharanshinde ,hemanthkumar r,hemanthkumar s , kiran p naduvimani, uday m. To reduce the labour cost and to maintain the hygiene and cleanness they proposed automatic cleaning cowshed in the dairy farm with a press of button where they applied rack and pinion mechanism powered by dc motor which is controlled by limit switches to clean the cowshed.

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FABRICATION OF MULTI PURPOSE AGRICULTURAL VEHICLE

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ABSTRACT

The paper aims on the design, development and the fabrication of the vehicle which can dig the soil, sow the seeds, leveller to close the soil and pump to spray water. The whole systems of the vehicle work with the battery and solar power and the vehicle is controlled by toggle switch. In recent years the development of the autonomous vehicles in the agriculture has experienced increased interest. The advantages of these vehicles are hands-free and fast input operations. In the field of agricultural autonomous vehicle, a concept is been developed to investigate if multiple small autonomous machine could be more efficient than traditional large tractors and human forces. Keeping the above ideology in mind, a unit with the following feature is designed; Ploughing is one of the first steps in farming. During this process we till the land and make it ready for the seed sowing. Plough will be used which will have teeth's like structure at the end and will be able to turn the top layer of soil down and vice-versa. Seed sowing comes next where the seeds need to be put in ground at regular intervals and these needs to be controlled automatically. Limiting the flow of seeds from the seeds chamber is typically doing this. Soil leveller is fitted to close the seeds to the soil and to level the ground. Water pump is used to spray the water.

Keywords: ***Fabrication, sow the seeds, spray water***

I. INTRODUCTION

Agriculture has been the backbone of the Indian economy and it will continue to remain so for a long time. A man without food for three days will quarrel, for a week will fight and for a month or so will die‖ . Agriculture is a branch of applied science. Agriculture is the science and art of farming including cultivating the soil, producing crops and raising livestock. It is the most important enterprise in the world. Over the years, agricultural practices have been carried out by small-holders cultivating between 2 to 3 hectare, using human labour and traditional tools such as wooden plough, yoke, leveller, harrow, mallet, spade, big sickle etc. These tools are used in land preparation, for sowing of seeds, weeding and harvesting. Modem agricultural techniques and equipment's are not used by small land holders because these equipment's are too expensive and difficult to acquire. By adopting scientific farming methods we can get maximum yield and good quality crops which can save a farmer from going bankrupt but majority of farmers still uses primitive method of farming techniques due to lack of knowledge or lack of investment for utilizing modern equipment. The use of hand

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ANTI PIRACY SCREENING SYSTEM: MOVIE PIRACY TRACKING USING TEMPORAL VISUAL MODULATION

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ABSTRACT

Cinema is a major entertainment for people in today's life. To entertain people a lot of investment is put on cinemas by the film – makers. Their effort is being ruined by few people by pirating the cinema content. They do it by capturing the video in mobile camera and upload it to websites or sell it to people and this goes on. In this paper, a technical method to prevent video recording in movie theatres is presented. An invisible light is projected from the screen to the whole audience that falls on the cameras which are optically sensitive to infra-red light in turn disturbing the acquisition functions of any camera making an illegal recording in the theatre useless. Nowadays, camcorder piracy has great impact on the motion picture industry. Although some watermarking technologies can track the movie pirate, the video content viewed in the theatre may be affected and they cannot obstruct the need of pirated movie because the watermarks in pirated movies are invisible. This paper presents a new method to defeat camcorder piracy and realize content protection in the theatre using a new paradigm of information display technology, called Temporal visual Modulation (TVM), which utilizes the differences between the human-eye perception and digital camera image- forming to stack an invisible pattern on digital screen and projector. The images formed in human vision are continuous integration of the light field, while discrete sampling is used in digital video acquisition which has "blackout" period in each sampling cycle. Based on this difference, we can decompose a movie into a set of display frames with specific patterns and broadcast them out at high speed so that the audience cannot notice any disturbance, while the video frames captured by camcorder will contain highly objectionable artifacts (i.e., the patterns). The pattern embedded in the movies can also serves as tracking information to reveal the one responsibility for the camcorder piracy.

Keywords: Camcorder piracy, Display technology, Invisible pattern, Temporal Visual Modulation (TVM), Watermarking technologies.

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Women Safety Measurement & Tracking System Using Raspberry Pi.

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ABSTRACT

Today, the safety of women and children is a major issue. The problem of our society. The number of victims is increasing during the day, we proposed a model Help ensure the safety of women and children global. We use different sensors, such as heartbeat sensors, Temperature sensor, and acceleration sensor for detection Heartbeat, sudden temperature changes and user movement. We also use GPS, which will help detect the location device. The GSM used in the model is used to send an alert message to it. The Guardian, relatives and the police station. We suggest Iot (Internet of Things based) devices will help Continuous monitoring of different sensors and GPS values used in the device.

Keywords: - Women safety, Raspberry Pi, Flex sensor, MEMS accelerometer, GPS module, GSM module.

I. INTRODUCTION

In the current situation, women compete with men. Every prospect of society. 50% of women the development of our country. But women are scared Harassment and killing. All these types of women the number of harassment cases is increasing. Very Ensuring the safety of women is essential. In this paper, the proposed belt model will provide Women need to be safe, so they can do this late at night jobs. The proposed model contains various sensors Continuous measurement of different parameters. Internet of Things (Internet) Things) is a relatively new and fast-growing concept. By Using IoT-based technology guardians, relatives and police monitor and track the values and locations of different sensors a device. The device is wearable and therefore easy to carry.

II. EXISTING SYSTEM

In the safety system based on women and children [1], the victim must press the emergency button, but pressing the button in an emergency may not be possible. With a smartphone, kids can't send their location. The child's parents must send a message to the child's system to find out where they are.In the "Targeting a friend's mobile tracking app", the tracking application software must be installed on the mobile phone, and the friend must register in the application's friends group [2] in advance. In order to track their friends, both parties need a mobile phone.In the feminine security intelligence system based on RFID and GPS technology [3], there are some limitations in terms of cost, signal interference, and access to information by invalid and unauthenticated users and the reaction in speech might be

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Tracking of Fuel Road Tankers for Anti pilferage and Anti Adulteration

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Abstract:

Fuel leakage detection is a very challenging task so the collection and control system of Fuel information is developed. A network that includes Fuel stations, Fuel storages, Fuel pressure regulating stations, the strategic positions where Fuel can leak can be tracked by GPRS. The functions of this system includes remote monitoring of the pressure on the pipe network, flow, environmental parametersand real-time collection of information, alerting and reporting.

The aim of this project is to monitor and track the fuel theft and adulteration while transporting. The system detects the leakage of the FUELusingFuel sensor and alerts the driver/company about the Fuel leakage by sending information through Wi-Fi.The proposed system uses the WI-FI to alert the driver about the Fuel leakage . When the system detects the FUELconcentration in the airexceeding the certain level then, it immediately alerts the driver/company by sending information through wi-fi to specified mobile phone and alert the driver by activating the alarm which includes the LED, Buzzer simultaneously and display the message on LCD display to take the necessary action and switch on the exhaust fan to decrease the Fuel concentration in the air.

Keywords: Adulteration, Fuel detection and prevention, Fuel sensor, microcontroller, Wi-Fi.

I. INTRODUCTION

The life on earth exists because of air and water. What happens if both are polluted? This is the situation in most of the urban areas. Air and water are being polluted at a rapid rate due to the excess use of chemicals, fertilizers, emissions of Fuels from vehicle, leakage of Fuel from household etc. Fuel emissions create respiratory illness and also environmental problems like acid rain, ozone layer depletion etc.

Fuels are volatile compounds which are colorless, odorless and tasteless. So when these compounds spread in air it will be difficult to identify with human naked eye. At present several methods are available which detect the Fuel leakage. But the drawback of these systems is it uses a static network of sensors. By using this static network the correct source of leakage cannot be identified. The Fuel as soon as it leaked it will spread very fast in air. Thus a proper device should be required to detect the leakage. In this project, an embedded electronic platform is used which can monitor a moving vehicle with chemical sensing system for Fuel leakage detection and environment monitoring.

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Leaf Disease Classification using SVM and Neural Network Classifier

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ABSTRACT

Leaf diseases are one of the common factors responsible for decreasing plant growth. Plant diseases are analyzed with their leaves. Many researchers have not been able to detect the disease. So, in this article, we introduced the Vector Support Machine (SVM), KNN and the Neural Network for the detection and the classification. Here, the data set affected by the disease is affected by four diseases, namely, late blight, late blight, black rot, and health. The main purpose of this article is to detect the disease. We calculated the percentage of leaves affected by their classification.

Overall results are evaluated as accuracy.

Keywords: Neural Network, Leaf Disease, SVM, Multi-SVM.

1.INTRODUCTION

It has been found that there is 1.7 million living species on the earth surface. Out of this huge number of living algae, animals, plants and humans; only plants are the species that are essential to make life cycle for the human life. Plants provide a way of living to humans in the form of breathing oxygen to other essential resources. A plenty of medicines and food are the gift of plants to humans. So, plants are essential components of human life and need to be protected at each stage. [1] In plants, major useful species is known in the form of agriculture crops. These crops are the feed for more than 70% of our country population. But the production of crops can be affected by diseases and these diseases are not visible with naked eyes. Plant diseases are analyzed from the affected leaf. One method to detect these diseases is manually deter- mined by the expert scientist. So, there is the need for some autonomous method Plant leaf disease is only vital factor which reasons important for reduce the quality and amount of plant generation. Detection of leaf disease of plants is very difficult in field of agriculture. If the identification is incorrect, the economic value of the market and production of the crop suffers

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CHILD RESCUE SYSTEM AGAINST OPEN BORE-WELL

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ABSTRACT

For past few years, there have been several accidents of children falling into an abandoned bore-well which is left uncovered and get trapped. Abandoned bore wells seems to be death pits for children. These bore-wells in turn have started to take many innocent lives. In such cases normal operations of child rescue from bore-wells is very complicated process with big machines and large man power. The aim of this paper is to rescue children falling in to bore-wells, this implies a new design which has a sensor kept at top of bore-well hole which helps to sense the child if he falls inside. If the system senses the child the automatic horizontal closure kept at around 3ft dept closes and prevents the children from falling beneath, it has the facility to monitor the trapped child, and provide a supporting platform to lift up the child driven by motors. The motor placed at the top turns a gear mechanism which, in turn, pushes 3 blocks arranged at 120 degrees from each other towards the side of the bore well. The whole system is firmly to the bore-well wall. The 2nd motor placed below the plate turns the bottom shaft by 360 degrees, thereby helping to locate the gap through which the lifting rod passes.

Keywords: IR sensor, LPC2148 ARM Controller, DC motor, LCD Display, GSM module

I. INTRODUCTION

Recently, many accident reports of children (and even adults) falling in open bore-wells have appeared in the print and the electronic media. Very few of the victims have been saved in such accidents. In some of these cases the dead body of the subject could not be collected easily. Even if rescued late, most victims were reportedly injured. To overcome such problems of these rescue operations, we have an alternative (feasible) proposal. We are developing a robot machine that can take out the trapped body in systematic way. It will also perform various life-saving operations for the sufferers such as oxygen supply. A video camera to observe the actual situation closely and continuous interaction with the sufferer could also be attached. It will be a light weight machine that will go down into the bore well pipe and hold the trapped body systematically.

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SOLDIER POSITION TRACKING AND HEALTH MONITORING SYSTEM

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ABSTRACT- *During wars and military search operations, soldiers get injured and sometime becomes loses. To find soldiers and provide health monitoring, army base station and need Global position system device for locating soldiers, wireless base station to sense health related parameters of soldiers and a wireless transceiver to transmit the data wirelessly. Upon losing in the battlefield it is necessary for the base station to guide the soldier. The base station can access the current status of the soldier which is displayed on the personal computer. The proposed system can be mounted on the soldier's body to track their health status and current location using Global positioning system. The information will be transmitted to control room through Internet of Things. The proposed system comprises of tiny physiological devices, sensors, transmission modules. Hence, with the use of the proposed system, it is possible to implement a low-cost mechanism to protect the valuable human life on the battlefield.*

Keywords: Biomedical sensors, GPS, GSM, Longitude, Latitude, Tracking.

I. INTRODUCTION

Soldier is always facing death. He never shirks responsibility. He fights in most difficult terrains, on hills and mountains, in plains and forest. The defence of the country is his primary mission. The role of soldier in safeguarding the frontiers of his modest land is unique. He lives and dies for NATION. It is our responsibility to help our soldiers. That's why we are introducing the project which will be very useful for providing the health status of soldiers, by monitoring and to provide medical help to them at critical stage in battlefield. There are many concerns regarding the safety of soldier. Soldiers entering the enemy lines often lose their lives due to lack of connectivity, it is very vital for the base station to known the location as well as health status of all soldiers. So many soldiers lost in war fields as there was no proper health backup and connectivity between the soldiers on the war-fields and the officials at the army base station. All must be really concerned about the safety of the soldiers, so decided to build the project which will efficiently keep a check on the health status of soldier and his precise location to the Base station, with necessary medical treatment as soon as possible. Soldier's tracking is done by using GPS and Wi-Fi module, which is used to provide wireless communication system. For monitoring the health parameters of soldier, we are using bio medical sensors such as temperature sensor and heart beat sensor. The system also consists extra feature with the help of that soldier can ask for help manually or send a distress signal to military if he is in need, by pressing the Switch that will be given to the Soldier. The GPS modem sends the latitude and longitude position with link pattern with the help of that military can track the current position of soldier. The system is very helpful for getting health status information of soldier and providing them instant help. This Project also help in minimizing rescue time.

II. LITERATURE SURVEY

The literature survey conducted with reference to this project is as follows:

a. An integrated navigation system for the soldiers. **Author:**Richard B. Marth and et.al. **Abstract:**DRM (Dead Reckoning Modules) and GPS constitute the main components of this integrated system. For decades, the soldiers have used all the conventional basic tools such as compass and other navigation tools while they are on their mission. DRM replaces the need for a compass as it allows reliable and hands-free navigation. DRM consists of an analog circuit and a digital circuit. Analog board has magnetometers, accelerometer, temperature sensor and a barometric altimeter. These components are useful to determine the horizontal component of

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Intelligent Traffic System for Pollution Monitoring with Auto Detection of Traffic Rules Violation and intimation

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ABSTRACT

Every vehicle in India has a standard emission of gases but the difficulty occurs when the emission is more than the standardized values. The key reason for this contravention of emission level being the partial combustion of fuel supplied to the engine which is due to improper prolongation of vehicle. This emission from the vehicle cannot be completely avoided but it can be certainly controlled. The aim of this paper is to monitor and control pollutants in vehicle by using pollution control circuit consists of a series of gas sensor, temperature sensor and GSM. An initial warning is given to the driver regarding the level of CO2 gas with the help of LCD display and later the same information is transferred to the police control room. This is done with the help of ARM processor that is integrated in the vehicle.

Keywords— MQ-7 sensor, MQ-135, GSM, RFID, LCD display

I.INTRODUCTION:

Air is essential for all humans, flora and fauna and other organisms. Its importance can be estimated by the fact that humans can survive without food and water for few days, but without air it is impossible to survive. Air is a mixture of various gases in which nitrogen content is 78%, 21% is oxygen and 0.03% CO2 is found and the remaining 0.97% contains hydrogen, helium, argon, neon, krypton, xenon, ozone and water vapour. The above quantities of different gases in the air keep it balanced. It becomes unbalanced when these is an uneven difference in their ratio, posing a grave threat to human health. Whenever CO2 and nitrogen increase in the air beyond permissible levels, it is called air pollution.

Here are few methods that the government are taking to control the vehicle pollution:

Promoting of vehicle use with CNG fuel (Compressed Natural Gas) instead of Petrol and Diesel fuel. CNG are called green fuel i.e. pollution from CNG vehicle are very less in comparison to Petrol or Diesel. Regularly checkup of pollution from vehicle through registered Authority. Promotion of Electric operated vehicle to reduce pollution. Phasing out of old or high polluted vehicles from the big city. Implementation of Euro-VI fuel in all over India progressively i.e. initially it was implemented in Delhi from April, 2018. In other big cities, it will be implementing till Dec, 2018. Euro-VI fuel will reduce the sulphur by 50 to 75 in Diesel engines.

Government of India are working to introduce LNG (Liquefied Natural Gas) as fuel, it will further reduce the pollution from vehicle. Government has taken initiative to introduce mass transport system i.e. number of buses

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STUDY ON BEHAVIOUR OF CONCRETE BY PARTIAL REPLACEMENT OF CEMENT BY FLY ASH & ALCCOFINE

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ABSTRACT

Cement concrete is the most extensive material used for construction in the world. The production of concrete ingredients causes harmful effects on the environment. In this study we are using industrial waste material to reduce environmental effects for production of concrete. The industrial waste like fly ash as partial replacement for cement has been used. Earlier fly ash was used in low volumes like 10%, 20% and 30% for replacement of cement. In this we considered 40%, 50%and 60% fly ash and 10% alccofine for replacement of cement. Concrete cubes are cast and subjected to water curing at atmosphere temperature. The compressive strength and split tensile strength are determined for 3, 7 and 28 days. The results are compared with replaced concrete and conventional concrete.

1. INTRODUCTION

• The waste materials from industries which are released to environment directly can cause environmental problem. Hence the reuse of waste material has been emphasized.

• Waste can be used to produce useful products so that natural resources are used more efficiently and the environment is protected from waste deposits.

• Fly ash is most extensively used mineral admixture for concrete production. It influences many properties of concrete in both fresh and hardened state.

• The global fly ash production is estimated to be greater than 1.5 billion tons which clearly indicates the extensive emission of carbon dioxide in the atmosphere.

• India itself produces nearly 75 million tons of fly ash annually and only a 5% of the total production is used as an alternative for various constructional materials.

• Alccofine 1203 can also be utilized as a high range water reducer to improve compressive strength or as a super workability aid to improve flow.

1.1 FLY ASH

• Fly ash is finely divided residue ash particle resulting from the combustion of coal in the furnaces which blows along with flue gas of the furnace.

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COMPOSITE DESIGNS FOR CRASH BARRIERS IN FAST AND MOTOR CYCLE LANES

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ABSTRACT

Crash barriers have several functions, used in different locations and are multiple types. Various cases of crashing of fully metal barrier semi rigids and spilling over the accidents when collision of these barriers with high speed vehicles is reported. Several studies are being conducted to improve the design of these barriers. In this study two new types of composite barriers composed of RCC frame and metal absorbers are proposed. M 40 concrete is used in RCC frames and standard W beams and channel sections are used as impact absorbers. These barriers provide more strength and stability without affecting the flexibility to the metal barriers.

Keywords Channels, Collisions, Composite barriers, RCC frame, W beams

INTRODUCTION

Several accidents involving vehicular collision with crash barriers and median dividers are being reported across the globe till recently. Shivani Bhatia popular singer, died and her husband severely injured in a road accident when their car crashed in January 2019 into the divider on the Yamuna Expressway [1]. A BMW car smashed and driver became critical after the car collided with lane divider in Cape Town in January 2019 [2] . Two girl students killed and another 3 suffered injuries when an i20 car hit the divider in Noida in March 2018 [3]. These type of accidents come under the category of vehicles ramming into fixed objects category. Fixed or stationary objects can be various types like trees, utility pole and median dividers etc. In 2017 in India 12085 accidents with fixed object happened and 4283 people were killed in such accidents [4] as shown Table 2.1. Total 13700 accidents with fixed objects occurred in 2016 and 4570 persons killed in these accidents [5]. Though there is a slight reduction in numbers in 2017 compared to 2016, the numbers are quite disturbing. Collisions with crash barriers fall under fatal category and hence there is a need to develop new designs for crash barriers that can help in reducing the severity of damage.

LITERATURE SURVEY

Based on the rigidity barriers are classified in to three types [6]) - Rigid, semi-rigid and flexible. Rigid concrete barriers are suitable for strong impacts and semi rigid W beam type and Thrie beam type steel barriers can withstand moderate collisions. But sometimes semi rigid barriers are subjected to heavy impacts due to high speed medium

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MODIFIED DESIGNS FOR RIGID CONCRETE BARRIERS

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ABSTRACT

Among all types of traffic barriers in use fatal collisions are reported more with concrete barriers. They have excellent strength and stability in preventing the spillover of the accidents. But their rigidity and poor collision absorption capacity are causes for concern. Various studies are being conducted to improve these barriers. In this study two modified models of concrete barriers are proposed. Metal sections are added to the concrete members to enhance the collision absorbing capacity. Though they are expensive compared the concrete barriers they can be helpful in saving lives.

Keywords: Collision, concrete barriers, metal sections, fatal, RCC frame

INTRODUCTION

Crash barriers serve various functions depending on their location. Median barriers function is to prevent collisions with vehicles coming in the opposite direction, Road side barriers need to control the traffic from making accidents with out of carriage way or road side hazards and bridge side barriers arrest the users from falling over the bridge. These barriers are made up of various materials like reinforced concrete, steel beams and channel sections and cables or wire rope etc. Concrete barriers are more durable, easy to maintain and bulky. They are strong, stable and rigid and good at decelerating the colliding vehicles including heavy trucks. Concrete barriers can be constructed either as pre cast barriers or cast in situ barriers They are widely used across the world since a long time particularly as median barriers and bridge side barriers. However their collision energy absorbing capacity is less and hence causes severe damage to the vehicles and passengers during collisions. Many fatal accidents involving collisions with traffic barriers are reported . Collisions with traffic barriers accounts to 9% [1] of fixed object crash deaths in USA in 2017 as shown in figure 1. In this study an attempt has been made to improve the collision absorbing capacity of the concrete barriers without affecting their strength and stability.

LITERATURE REVIEW

A tata indica car collided with a divider as shown in figure 2 leading to the death of 3 youth in Jalandhar India[2] in November 2018. Former union minister and newly elected law maker in the state of Karnataka in

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A study on Health status assessment of road construction project workers in and around Bengaluru

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ABSTRACT
Road construction workers include asphalt workers, ground preparation workers, and heavy vehicle operators who are directly or indirectly exposed to occupational hazards.The road construction sector has the largest number of unorganized workers in India. They are the backbone of our nation's infrastructure building in all the aspects. Both men and women are integral part of this community, but women join as unskilled workers and remain to be unskilled till their working life span. one or other health issues due to hazards working environmentsuch as dust, noise, heat and cold, vibration, and chemicals. Noise induced hearing loss, respiratory diseases, musculoskeletal problems, skin and eye irritation are the prevalent health problems found among these workers, thus this study intended to focus on health problems among road construction workers.
The descriptive nature of the study included 474 road construction workers. Snow ball sampling Technique was adopted for the selection of respondent and data collected through interview method.Health assessment studies provide evidence based link between causative agents and health outcomes. Road construction activities present variable occupational health hazards including exposure to hazardous substances including silica dust, asphalt, organic solvents, and agents, such as noise, vibration, and heat, urinary tract infection , musculoskeletal problems, backache,skin problems and respiratory related problems are affecting workers' healthpointed are the major health issues .Excessive exposure to these substances and agents may result in illness, injury, permanent disability, or even death. Fumes and vapors generated during the application of hot asphalt to the surface cause skin irritation, rashes, burns, and respiratory problems

Keywords: Road construction workers, Occupation health and Safety

Introduction:

After the United States of America, India is the second largest road network in the world, at about more than 4 million kilometres .More than 50% of Indian roads are paved (about more than 2 million kilometres). Government of India, under the National Highways Development Project and various private builders are implementing multiple projects for construction or up gradation of paved roads. The process of tarring the roads in India consists of various steps with potential exposure to allergens, pollutants, and carcinogens. It begins with laying down large stones, followed by small stones, then pouring molten bitumen (asphalt) over it and finally dusting it with stone dust.

Brushing of dust in preparation of the surface, crushing of stones, and mixing of cement for adjacent concrete worksexpose the workers to air borne particles. Handling of concrete mixture and molten bitumen, coupled with

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ATMOSPHERIC WATER HARVESTING

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ABSTRACT

In many regions of the world, the climatic conditions are suitable for generating drinkable water; however, they have one or more types of water scarcity. Water supply in urban areas is always shortage against total water demand. This scenario requires an alternative source to bridge the gate between demand and supply. Atmospheric condition has been studied like humidity, annual precipitation and different temperatures. The studied method is for water scarcity regions. It is a new technique to harvest water from atmosphere by rain water harvesting and atmospheric water generator which run via wind energy and solar energy. The water generator works on the principle of Dehumidification.

KEYWORDS: *Coefficient runoff, Dehumidification, Humidity ratio, Population forecast, Relative humidity, Water demand.*

INTRODUCTION

Water that covers about 70%of earth's surface and essential substance for the nature and the ecosystem of the world's and about 97.5% of all water on the earth is salt water.

Water leaving only 2.5% as fresh water which can be found in various forms such as glaciers, ground water surface water as well as atmosphere water. So it's evident that fresh water though is a limited resource.

Report revealed that 768 million people would wide lack Acer to safe water which is often termed as physical water scarcity. Whereas 1.8 billion people are predicted to live in regions with absolute water scarcity by 2025. This is due to unplanned management of water resources, insufficient planning and insufficient political will. Water scarcity is therefore thought to be a serious problem throughout the world and to overcome this problem is one of the biggest challenges of the 21st century.

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Combined experimental and simulated vibrational spectral analysis of pyridine, 3-bromopyridine, 2-fluoropyridine and 3-bromo-5-fluoropyridine

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ABSTRACT

FTIR (4000–400 cm^{-1}) and NIR FT-Raman (4000-50 cm^{-1}) of pyridine, 2-fluoropyridine (2FP), 3-bromopyridine(3BP) and 3-bromo-5-fluoropyridine(3,5BFP). In the case of pyridine, 2-fluoropyridineand 3-bromopyridine, we re-measured their spectra and computed the same from ab initio and DFT calculations at RHF/6-31G (d) and B3LYP/6-31G (d) as computed for 3,5BFP levels for a critical review. A complete interpretation and assignments of the observed spectra have been proposed. Reductions in symmetry from C_{2v} of pyridine to Cs of its mono- and di-substituted derivatives - 2FP, 3BP and 3,5BFP – have influenced their vibrational structures. The ring breathing mode 1 strong at 992 cm^{-1} in pyridine, is up-shifted in 3BP and 3,5BFP in the interval of 15 - 25 cm^{-1}, and it remains unaltered in 2FP. The mode 12 as C-C in-plane bend is substitution sensitive appearing at 532 cm^{-1} in 3,5BFP from 1030 cm^{-1} in pyridine. The C-Br stretching mode is observed in IR at 701 cm^{-1} in 3BP whereas in 3,5BFP it is diminished in intensity and shifts to 859 cm^{-1}. The C-F stretching mode is observed at 1247 cm^{-1} in 2FP, shifts to 1230 cm^{-1} with increased intensity in 2BFP. These shifts are in agreement with the computed values. Further, the proposed assignments are of value in the spectra-structure correlations.

Keywords - 3-Bromo-5-fluoropyridine, Pyridine, ab initio, DFT, IR, Raman.

1. INTRODUCTION

Halogen substituted pyridines are of importance as reagents in analytical chemistry; some of them show anesthetic properties and are used as drugs for certain brain diseases [1]. Literature reveals that the vibrational spectra of all but iodine at 2- and 4-halogen substituted pyridines were extensively studied [2, 3]; and recently vibrational spectra and normal coordinate calculations of 2-fluoro and 3-fluoropyridine have been reported [4]. A review of the assignments of 2-iodopyridine aided by extensive DFT calculations have been reported by our group [5, 6]; this was followed by a similar study of 3-iodopyridine [7]. As for di-substituted pyridines, 2-fluoro-5-bromopyridine has also been investigated [8]. Likewise our group also reported a detailed analysis of 2-chloro-5-bromopyridine [9]. Other studies include *ab initio*

1. A Literature Study on Fire Detection Using Colour Pixel Classification

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Abstract

The work is to fire are common issues and its occurrence could cause collateral damage toward nature and human properties. Thus, fire detection has been an important issue to protect human life and property and has increases in recent years. The paper focuses on the algorithm of fire detection using image processing techniques i.e. colour pixel classification. The Fire detection system does not require any special type of sensors and it has the ability to monitor large area and depending on the quality of camera used. The objective of this research is to design a methodology for fire detection using image as input. The propose algorithm is using colour pixel classification. This system used image enhancement technique, RGB and Y Cb Cr colour models with given conditions to separate fire pixel from background and isolates luminance from chrominance contrasted from original image to detect fire. The system proposed achieved 94% fire detection rate on average.

Keywords: Fire detection, image processing, RGB, Y Cb Cr colour models.

I. INTRODUCTION

Fire can spread rapidly and cause incredible death toll and property. Subsequently, early fire location and cautioning is basic. Fire indicators, smoke locators and temperature finders have been broadly use to ensure property and give cautioning of flames. In any case, smoke and temperature location detected by sensor, is slower than light and colour discovery, which is the substantive recognition strategy propose in this paper[1]. Besides, to cover the whole region possibly subject to flame, a fire identification system is propose in light of shading location. The objectives of the propose study are to study a methodology to detect fire using image processing technique and implement the methodology using fire pixel classification from the RGB input image.

The sensors are not relevant for open-air environment and in huge foundation settings, for example, mountains and high building. Because of the quick improvement of computerized camera innovation and propelled content base dimage processing, there is a noteworthy pattern to supplant customary fire identification

2. A Study on Advanced Creation of Virtual Personal Assistant for New Era

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Abstract

One of the goals of Artificial intelligence (AI) is the realization of natural dialogue between humans and machines. In recent years, the dialogue systems, also known as interactive conversational systems are the fastest growing area in AI. Example for dialogue system includes Apple's Siri, Microsoft Cortana etc. In this proposal, we have used the multi-model dialogue systems which process two or more combined user input modes, such as speech, image and manual gestures in order to design the Next- Generation of VPAs model. The new model of VPAs will be used to increase the interaction between humans and the machines by using different technologies, such as gesture recognition, image recognition, speech recognition, the vast dialogue and conversational knowledge base, and the general knowledge base.

Key Words: Virtual Personal Assistants; Multi-modal Dialogue System; Gesture Recognition; Speech Recognition; Image Recognition.

Introduction

Spoken dialogue systems are intelligent agents that are able to help users finish tasks more efficiently via spoken interactions. Also, spoken dialogue systems are being incorporated into various devices such as smart-phones, smart TVs, in car navigating system. Also, Dialogue systems or conversational systems can support a wide range of applications in business enterprises, education, government, healthcare, and entertainment. Personal assistants, known by various names such as virtual personal assistants, intelligent personal assistants, digital personal assistants, mobile assistants, or voice assistants. Many companies have used the spoken dialogue systems to design their dialogue system device, such as Microsoft's Cortana, Apple's Siri, Amazon Alexa, Google Assistant. There are many techniques used to design the VPAs, based on the application and its complexity.

Moreover, there are some companies and researchers that have attempted to improve their applications by using the Multi-modal dialogue technique to design the Next-Generation of dialogue systems. The Multi-modal dialogue process two or more combined user input modes, such as speech, pen, touch, manual gestures, gaze, and head and body movement. For example, In the Ford Model U Concept Vehicle, this system, including a touch screen and a speech recognizer, is used for controlling

3. An Integrated Dynamic Voltage Restorer - Ultra capacitor Design for Improving Power Quality of the Distribution Grid

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Abstract

Voltage sag and swell is the most serve power quality problem in the electrical system. These issues should be compensated accurately. The dynamic voltage restorer is effective in order to mitigate voltage sag and swell in distribution system. It is very popular as a cost effective solution for the protection of sensitive load from sag and swell. Now a days Energy storage technologies are increasing their presence in the market because of operational and maintenance charge is decreasing rapidly. In this paper we use integration of rechargeable UCAP-based energy storage into the Dynamic voltage restorer. Ultra capacitor is specially designed capacitor which able to holding large amount of electrical quantity. Ucap is cannot directly connected to dc link of dvr so UCAP integrated in to the power conditioner through bi-directional dc-dc converter. The integrated Ucap-Dvr system will have active power capability will able to compensate the sag and swell, which last 3t 1s. The design and control of inverter and dc-dc converter is described. The simulation model of overall system is developed.

Key Words: UCAP, dc-dc converter, d-q control, DVR, Voltage Sag, Swell, Energy storage integration.

I. Introduction

The main purpose of the power system is to supply electrical energy or power to the consumers in sufficiently high grade of quality. Power quality means the quality of normal voltage supplied to your facility Voltage sag, swell, harmonics, etc. are the major power quality problems .power quality problems are originated from utility and customer side. FACTS devices and customer power device are solid state power electronics components used for the solution of both utility based and customer based solution. The DVR is a custom power device connected in series with the distribution system, which protects industry from bulk of these disturbances like voltage sag, swell etc. From the first use itself dvr gained substantial popularity and inverter based dvr for preventing customers from temporary voltage disturbances was

4. Tall Structure Seismic Behaviour Analysis with Solid and Coupled Shear Walls

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Abstract

The construction of high rise structures increases due to shortage of land and rapid growth of population. Introduction of advancement in construction materials and structural systems against lateral loads designer will achieve structural efficiency, aesthetic appearance and geometric versatility. Shear walls are structural systems which provide stability to structures from lateral loads. Coupled shear walls are one of the system commonly used in medium and high rise structures to resist lateral loads. When two shear walls are interconnected by beams along their heights then it is called as coupled shear wall. These building systems should not collapse or be induced to severe damage during earthquake actions due to high strength, high ductility, high energy absorption capacity and high shear stiffness to limit lateral deformation. In Coupled shear wall structure, major portion of lateral load is taken by the Coupled shear wall members, when intern releases forces to other members of the structure. This also reduces sectional requirement of the beams and columns in Coupled shear wall building. In the present study, the structural response of conventional, Shear wall and Coupled shear wall with different location investigated to evaluate structural system benefits. A building of G+11 storeys with plan size 23.2m x 17.4m, located in a seismic Zone V is considered and analyzed by ETABS 2016 Software. Nine models, i .e conventional frame structure, Shear wall in different location and Coupled shear wall in different location with same plan area are considered for study. All structural members are analysed as per Indian Standard codes. Comparison of analysis result in terms of Time Period, Storey Shear, Storey displacement Storey Drift, Storey Stiffness of structure is presented. From the analysis results it is observed that, the Coupled shear wall structures along X direction performs better in terms Time Period, Storey Shear, Storey displacement, Storey Drift, Storey Stiffness. Coupled shear wall in intermediate X and Y direction show more weight difference compared to shear wall.

Keywords: High rise structures, shear walls, conventional frame structure, plan, time period, storey shear, storey displacement storey drift, storey stiffness

5. Creating Digital Notice board using voice to text conversion

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Abstract

Notice Board is the easiest way for circulating information in any University. The Notice Boards are the most Fitting platform which can allow one to put up information that anyone can view. The proposed system deals with smart way of creation of the notice through voice. Talking is easier than typing or writing, This system bestows a platform where in the contents to the notice can be given by speech. The speech to text conversion technique is used to extract the text from the speech and the extracted text is stored on the cloud. This enables for circulation and storage of notices using the cloud applications. A general format of the notice is created as a template, the contents are stitched with this format and the final notice is displayed. The proposed system also provides a secure application for creating notices. Maintainability, reliability and centralization are all other features in the proposed system designed.

Key Words: Voice to Text conversion; Notice Board; style;)

I. Introduction

A bulletin board (Pin board, Notice board or notice board) is a board used specifically for displaying and viewing of Certain messages, for example, to publish items required or for sale, to declare or display event times or dates, or to showcase certain information. Bulletin boards are usually made of a material such as wood and sometimes metal to allow adding and removal of messages, texts and notices, as well as a writing surface such as blackboard or whiteboard or a green board. A bulletin board which combines a wood board and a writing surface is known as a combined bulletin board.

Bulletin boards can also be completely in the digital realm and stored and categorized on computer networks so that viewers can add or remove notices for other viewers to look at or post, or even private messages intended for specific people or a group as in a bulletin board system.

Bulletin boards are extremely popular in Educational institutions and Corporate Workspaces. They are used by many Athlete groups and extracurricular groups and anything from Local shops to Government notices. Dormitory corridors, well used public spaces, lobbies, and special kiosks often have wooden boards

6. Creation and Circulation of Digital Notices Using Voice to Text Conversion and Cloud Infrastructure

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Abstract

The Simplest and the Easiest way for dispensing information in any University or in a Corporate Workspace is with the use of a Notice Board. The Notice Boards are the most Fitting platform which can allow one to put up information that anyone can view. This proposed system deals with smart way of creation of the notice through speech. Talking is easier than typing or writing, This system bestows a platform where in the contents to the notice can be given by speech. The speech to text conversion technique is used to extract the text from the speech and the extracted text is stored on the cloud. This enables for circulation and storage of notices using the cloud applications. A general format of the notice is created as a template, the contents are stitched with this format and the final notice is displayed. The proposed system also provides a secure application for creating notices. Maintainability, reliability and centralization are all other features in the proposed system designed.

Keywords—Speech to Text conversion; Bulletin Board; style; styling; insert (key words)

I. Introduction

A bulletin board (Pin board, Noticeboard or notice board) is a board used specifically for displaying and viewing of Certain messages, for example, to publish items required or for sale, to declare or display event times or dates, or to showcase certain information. Bulletin boards are usually made of a material such as wood and sometimes metal to allow adding and removal of messages, texts and notices, as well as a writing surface such as blackboard or whiteboard or a green board. A bulletin board which combines a wood board and a writing surface is known as a combined bulletin board.

Bulletin boards can also be completely in the digital realm and stored and categorized on computer networks so that viewers can add or remove notices for other

7. Current trends in cloud computing

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Abstract

Objectives: This work reviewed the latest, state-of-the-art works in the area of Cloud Computing to help researchers, developers and stakeholders in decision-making. Method: The reviewed works are filtered after the rigorous process by using renowned indexing database of ACM and IEEE along with the subject based journals on Cloud Computing of international repute. These papers are further filtered by selecting papers published in last 4 years only. Our initial findings lead our reviews to five major areas of Cloud Computing including Load balancing, resource scheduling, resource allocation, resource sharing, and job scheduling. In this work we have limited ourselves to only technical aspects of cloud computing while excluding areas of security, privacy and economics (for example CapEx). We have presented our findings in the form of tables and graphs showing trends in Cloud Computing towards research community on the basis of five aspects as mentioned above. Findings: Our findings show that researchers are working in the area of Job Scheduling while low attention has been given in Resource Scheduling. Moreover, an open source robust frame- work for research community is needed covering all the aspects shown above for running experiments. Currently these features are available in commercial and proprietary frameworks including Amazon Web Service, Microsoft Azure, and Google Cloud Platform.

Keywords: Load balancing; resource scheduling, job scheduling

I Introduction

Modern cloud computing has changed the computing paradigm with tools like i.e. Azure ML services, Amazon AWS, CV (Computer Vision) and DL (Deep Learning) services, Google Cloud, CV and DL services. In this work, we provide a survey of the latest research trends in cloud computing on the basis of factors involved in distributed systems. One of the factors include Resource Allocation that allows us to allocate cloud resources in dynamic environment effectively. Another factor on which we surveyed the existing systems is Load Balancing, which aims to optimize resource usage, maximize through- put while response time minimum, and avoid overloading of individual resource. Parameters on Fault Tolerance including Reliability and Availability can be achieved through redundancy. comparison on resource scheduling algorithms along with resource distribution policies. This survey however only

8. Design and implementation of smart and secure home automation system based on IOT

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Abstract

The hunger for automation brought many revolutions in the existing technologies. These had greater importance than any other technologies due to its user-friendly nature. Thus this paper aims in designing an advanced home automation system using normal web server and Wi-Fi technology. Wi-Fi (Short for Wireless Fidelity) is a wireless technology that uses radio frequency to transmit data through the air. Wi-Fi has initial speeds of 1mbps to 2mbps. Wi-Fi transmits data in the frequency band of 2.4 GHz. It implements the concept of frequency division multiplexing technology. Range of Wi-Fi technology is 40-300 feet. The controlling device for the automation in the project is a Arduino UNO. The data sent from PC over Wi- Fi will be received by Wi-Fi module connected to Arduino UNO. Arduino UNO reads the data and decides the switching action of electrical devices connected to it through Relays. The automation system will have the ability to be controlled from a central host PC, the Internet, and also remotely accessed via a Pocket PC with a Windows Mobile based application.

Keywords: Arduino UNO. Wi-Fi technology, home automation system, Webserver

I. INTRODUCTION

In the current system webserver is installed on a windows PC so the home appliances can be controlled using only by using the device on which webserver is installed. This can be further developed installing webserver on cloud. Day by day, the field of automation is blooming and these systems are having great impact on human beings. Advantage of installing webserver on the cloud is that home can be controlled by using any device which has Wi-Fi 802.1 and a web browser. By visiting the IP address of the cloud the control actions can be taken. There are several new technologies which can become a part of the home in the near future. Increased efficiency, control, and customization, Artificial intelligence is set to make you lazyin the near future. Technology will become much more efficient and one will be able to control everything from volume to security from one central place. The devices will work automatically and you don't need to waste your energy it will act upon user's preferences. AI would revolutionize home by automatic threat detection and proactive alertness. All the tech giants are working in the field of IoT to bring advancements in

9. Power Consumption in Real time Applicatio Specific Circuits

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Abstract

While numerous power optimization techniques have been proposed a levels of design process abstractions for electronic components, until now, po minimization in mixed mechanical-electronic subsystems, such as disks, has not addressed. We propose a conceptually simple, but realistic power consumption m for diskdrives. The core of the paper areheuristics for optimization of po consumption in several common hard real-time disk-based design systems. show how to coordinate tasks scheduling and their disk data assignment, in orde minimize power consumption in both electronic and mechanical component used disks. Extensive experimental results indicate significant powerreduction.

1. Introduction

Magnetic disks are the de-facto standard forproviding non-volatile volume memory capacity in modern computer systems. Disks provide superior tr off with respect to common design metric such as cost, memory capacity, late data input-output bandwidth and reliability in comparison with all alternatives. Until recently, disks have been used mainly in general pur computing systems. However, convergence of several application and technolo trends resulted in the rapidly increasing importance of massive storage in applica specific systems. There is rapid growth in applications such as internet-b servers (e.g. world wide web), video-on-demand, interactive television, video conferencing, all of which have as dominating components volume data management. At the same time technological trends indicate that design metrics of modern and future application specific designs, such as sp power, and weight, are dominated by massive storage elements. Most o magnetic disk is already a bottleneck in current application specific computer communication systems.

Another equally pronounced consequence of the current application technological trends is increasing importance of power minimization. Our strategic objective is to give impetus for research and development of synthesis compilation techniques for design of massive storage-based application spe systems. We have three main technical goals in this paper:

10. Experimental Study on Properties of Granite Concrete

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Abstract

Concrete made with Portland cement is probably the widely used binding material in the world. Manufacturing of cement production is one of the concerns worldwide that impact the environment with major impact being global warming due to CO2 emission during the production of cement. Alternatively, when industrial wastes are recycled or reused, CO2 emissions are reduced and less material is dumped as landfill and more natural resources are saved. Hence, this is an attempt to replace the cement by granite powder in concrete. In this experimental study, granite powder was used in concrete as a cementetious material as partial replacement of cement. Replacement of cement by granite powder was made by 5%, 10%, 15%, 20% by weight of cement. For each replacement strength parameter test was conducted. Compressive strength after 7 and 28 days curing was obtained. From the test results it was found that concrete at the level of 15% partial replacement of cement with granite powder has better workability and high compressive strength of 7 days and 28 days curing. The granite dust powder is free of cost. Hence it seems to be economical.

Keywords: GP (granite powder), cement, replacement behaviour of concrete, PCC

I. Introduction

Concrete is one of the most widely used construction materials in the world. The environmental and economic concern is the biggest challenge concrete industry is facing. The ingredients of concrete is cement, fine aggregate, coarse aggregate and water. Leaving the waste materials to the environment directly can cause environmental problem. Hence the reuse of waste material has been emphasized. Waste can be used to produce new products or can be used as admixtures so that natural resources are used more efficiently and the environment is protected from waste deposits. It is estimated that cement production is responsible for about 3% of the global anthrogenic greenhouse gas emission and for 5% of the global anthrogenic CO2 emission. As about 50% of the CO2 released during cement production is related to the decomposition of limestone during burning, mixing of clinker with supplementary materials called blending is considered as a very effective way to reduce CO2 emission.

The advancement of concrete technology can reduce the consumption of natural resources and energy sources and lessen the burden of pollutants on environment. Presently large amounts of granite dust are generated in natural stone processing plants with an important impact on environment and humans. This project describes the feasibility of using the granite sludge dust in concrete production as partial replacement of cement. In INDIA, the granite and granite stone processing is one of the most thriving industry the effects if varying granite dust contents on the physical and mechanical properties of fresh and hardened concrete have been investigated. Most common blending materials used in cement production added in plant or sites are industrial wastes. This is due to the fact that recycling of industrial wastes as blending materials has technical, economical and environmental benefits besides the reduction of CO2 emission from cement production.

Granite dust powder which is a by-product of granite processing factory was studied by many researchers for its use in concrete and mortar production as sand replacing or cement replacing

11. Hybrid Renewable Power System Design Using Solar, Piezoelectric and Wind Energy Combined with Arduino

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Abstract

Reaching the non-electrified rural population is currently not possible through the extension of the grid since the connection is not economically feasible. Further, the increase in oil prices and the unbearable impacts of this non renewable energy source on the users and on the environment makes it to reduce employing to rural development agendas. This problem can overcome by using "Hybrid Power Generation". In recent years, power-generation from hybrid system is developing into an essential and common aspect in distribution and generation systems. Hybrid systems have proved to be the best option to deliver "high quality" power. Renewable energy sources i.e., energy generated from solar, wind, biomass, hydro power, geothermal and ocean resources are considered as a technological option for generating clean energy. But the energy generated from solar and wind is much less than the production by fossil fuels, however, electricity generation by utilizing PV cells and wind turbine has increased rapidly in recent years. This paper presents the Solar, Wind and Piezoelectric hybrid Power system that harnesses the renewable energy in Sun and Wind and footstep pressure of people to generate electricity. System control relies mainly on controller. It ensures the optimum utilization of resources and hence improves the efficiency as compared with their individual mode of generation. Also, it increases the reliability and reduces the dependence on one single source. This hybrid solar-wind power generating system is suitable for industries and domestic areas.

Introduction

The world is facing a major threat of depletion of the fossil fuel reserves. Most of the present energy demand is met by fossil and nuclear power plants. A small part is met by renewable energy technologies such as the wind, solar, biomass, geothermal, vibration etc. There will soon be a time when there will be a severe fuel shortage. As per the law of conservation of energy, "Energy can neither be created, nor be destroyed, but it can only be converted from one form to another". Most of the research now is about how to conserve the energy and how to utilize the energy

12. IOT Based Flood Management and Alerting System

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Abstract

Nowadays, certain actions are taken to improve the level of cleanliness in the country. People are getting more active in doing all the things to clean their surroundings. Various movements are also started by the government to increase cleanliness. We will try to build a system which will notify the corporations to empty the bin on time. In this system we will put a sensor on top of the garbage bin which will detect the total level of garbage inside it according to the total size of bin. When the garbage will reach the maximum level, a notification will be sent to the corporation's office, and then employees can take further actions to empty the bin. This system will help in cleaning the city in a better way. By using this system people do not have to check all the systems manually, but they will get a notification when the bin is filled.

Index Terms—Raspberry PI, Ultrasonic sensor, IoT, GSM (Global system for Mobile communication), WLAN.

I. INTRODUCTION

Flood monitoring is a particularly challenging application for Internet of Things (IoT). In fact, it offers a complex scenario for the variety and number of sensors involved, their location and relative communication problems. The type of sensors involved in the process and the corresponding type of installation depend on the kind of collected data and on their geo-localization (i.e., urban areas, where powering and communication are relatively simple, or in remote and difficult to access mountainous or country locations). The kind of data collected ranges from rain monitoring to river gauging with several parameters to be monitored and compared. In the case of rivers, the problem depends on their size and dimension and geography of the region where they flow, if they are small creeks or wide rivers, if they flow in a steep or fiat area, in open air or are channeled underground, etc.

From this point of view, we already activated different collaborations and definitions of common goals with public administrations involved in the management of the experimental areas. To this aim, we designed a general hardware and software IoT infrastructure and architecture applicable to the environmental problem mentioned above, but extensible to the more general problem of monitoring the environment in densely inhabited areas.

13. INVESTIGATION OF THE EFECT OF MACHINING PARAMETERS ON MACHINABILITY USING TAGUCHI TECHNIQUE

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Abstract

Machinability of a material gives the idea of the ease with which it can be machined. There are many methods used for determining machinability of the materials. It can be determined by the measure of tangential cutting force. Lesser the amount of cutting force required for the removal of a certain volume of metal or the higher the volume of metal removed under standard cutting forces the higher will be the machinability. Optimization of machining parameters not only increases the utility for machining economics, but also the product quality increases to a great extent. Since turning is the primary operation in most of the production process in the industry, tangential cutting force of turned components has been found to be influenced in varying amounts by a number of factors such as feed rate, work hardness, unstable built up edge, speed, depth of cut, cutting time. The milling parameters evaluated are spindle speed, feed rate, and depth of cut. The Taguchi orthogonal arrays, signal-to-noise (S/N) ratio, and analysis of variance (ANOVA) are employed to analyze the effect of these cutting parameters. The analysis of the results indicates that the optimal cutting parameters combination for good surface finish is high cutting speed, low feed rate, and low depth of cut.

Keywords: Machinability, cutting force, feed depth of cut built up edge, work hardness

I. Introduction

Machining parameters and process of composite materials are important to produce the necessary part for resulting assembly and achieved required geometrical shapes and dimensional tolerances. Conventional machining process such as milling, drilling, turning, abrasive cutting, and grinding are frequently used for producing complex characteristic of composite part. Normally it is done by removing materials in term of chips formation. The shape and size of chip removed, material removal rate, and excellent surface finish are directly related to the kinematic relationship between the cutting tool and workpiece[1].

14. Machine Learning Techniques for Application of Web-Based Intelligent Learning Diagnosis System

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Abstract

This work proposes an sensible getting to know prognosis machine that helps a Web-primarily based totally thematic getting to know model, which objectives to domesticate freshmen' ability of expertise integration through giving the freshmen the opportunities to choose the getting to know subjects that they are interested, and gain expertise at the unique subjects through surfing at the Internet to look associated getting to know course- ware and discussing what they've found out with their colleagues. Based on the log files that record the freshmen' beyond on-line getting to know behavior, an sensible prognosis machine is used to present suitable getting to know guidance to help the freshmen in enhancing their study behaviors and grade online magnificence participation for the instructor. The fulfillment of the freshmen' very last reports can also be predicted through the prognosis machine accurately. Our experimental consequences screen that the proposed learning prognosis machine can efficiently help freshmen to expand their expertise while surfing in cyberspace Web-primarily based totally "theme-primarily based totally getting to know" model.

Keywords: Naïve Bayesian classifier, Support vector machines, Learning diagnosis, Fuzzy expert system, K-nearest neighbor, Web-based learning, Theme-based learning

1 Introduction

The surprising development of information technology has created a new vision for network learning that its influence has already spread over the world to facilitate educational innovation. Therefore, many countries have been paying attention to computer technology and expect it can facilitate the education reform in an effective and efficient ways. It is well known that the application of computer and Internet teachings to traditional teaching requires some kind of transformation. Consequently, the research and development of proper learning model has to seriously consider the mutual interaction between the users and the computers, the instructor and the learners, and the interaction among the learners. Embed the related research issues to the above process, the splendid research results then can be expected.

15. Energy Efficient Routing Algorithm for Maximizing Network Lifetime of MANETs

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Abstract

Nodes in Mobile Ad Hoc Networks (MANETs) are limited battery powered. That's why energy efficient routing has become an important optimization criterion in MANETs. The conventional routing protocols do not consider energy of the nodes while selecting routes which leads to early exhaustion of nodes and partitioning of the network. This paper attempts to provide an energy aware routing algorithm. The proposed algorithm finds the transmission energy between the nodes relative to the distance and the performance of the algorithm is analyzed between two metrics Total Transmission energy of a route and Maximum Number of Hops. The proposed algorithm shows efficient energy utilization and increased network lifetime with total transmission energy metric.

Keywords: Energy efficient algorithm; Manets; total transmission energy; maximum number of hops; network lifetime

I. Introduction

Mobile Ad Hoc Networks (MANETs) consists of a collection of mobile nodes which are not bounded in any infrastructure. Nodes in MANET can communicate with each other and can move anywhere without restriction. This non-restricted mobility and easy deployment characteristics of MANETs make them very popular and highly suitable for emergencies, natural disaster and military operations.

Nodes in MANET have limited battery power and these batteries cannot be replaced or recharged in complex scenarios. To prolong or maximize the network lifetime these batteries should be used efficiently. The energy consumption of each node varies according to its communication state: transmitting, receiving, listening or sleeping modes. Researchers and industries both are working on the mechanism to prolong the lifetime of the node's battery. But routing algorithms plays an important role in energy efficiency because routing algorithm will decide which node has to be selected for communication.

The main purpose of energy efficient algorithm is to maximize the network lifetime. These algorithms are not just related to maximize the total energy

16. Investigation of linseed oil blend performance with diesel using single cylinder four stroke diesel engine

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Abstract

The scenario of increasing demand for energy is paving the way for finding alternative sources of energy. The limited fossil fuel sources are unable to provide for the continuously increasing demand of energy. Along with this with increasing price of fossil based fuels and the impacts of fossil based fuels on environment and global warming, has forced us to find for an alternative source of energy, which is renewable, safe and non-polluting.

The main objective of this work is to experimentally analyze the performance of blended Linseed oil with diesel and check the performance and emission like CO, HC from the exhaust gases of diesel engine with a four stroke single cylinder diesel engine. The work is aimed at developing knowledge as to whether oil blend with diesel is an acceptable alternative fuel, both with respect to the amount and type of emissions generated and with respect to impacts on the engine performance parameters like Brake power, Brake specific fuel consumption, Mechanical efficiency, Brake power.

The experiment is conducted initially using only diesel as the fuel and the performance parameters and engine emissions data are tabulated. Later the experiment is carried out on the same engine for the same operating parameters for different blending ratios of linseed oil with diesel i.e. B10, B20, B30. Out of the three blends B20 gave optimum results and hence comparison of only blend B20 along with diesel are given out in the results.

Experimental setup:

A experimental set up consists of a Kirloskar make, single cylinder, constant speed, water cooled, direct injection diesel engine connected to rope brake dynamometer for loading the engine as shown in the figure 1.The smoke meter and Gas Analyzer were also kept in proximity for the measurements of various exhaust gas parameters as shown in figure 2. The engine was started at no load by pressing the exhaust valve with decompression lever and it was released suddenly when the engine was hand cranked at sufficient speed. Then feed control was adjusted so that engine attains rated speed and was allowed to run about half hour till the steady state condition was reached. With the fuel measuring unit and stop watch, the time elapsed for the consumption of 20cc of fuel was measured. Fuel consumption, RPM, exhaust

17. Design and fabrication of vertical axis windmill blade using weightless materials

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Abstract

Wind energy is a renewable source of energy which uses a wind turbine to produce power. It is one of the preferable ways of producing power in a green manner. Wind turbines are a great area of research to reduce the weight of the blades and also work on different types of designs of wind turbine blade specifications. It is essential that a wind turbine should not require much of maintenance work after it is installed, especially the micro scale wind turbine which can be used for producing power for household energy requirements. It is for this purpose that a lot of research has been going on in the wind turbine blade region. Micro scale wind turbines are exciting prospects for the future, which require lesser area and can be installed on the roof of house for energy requirements. In addition it also opens the area for research on how to use the effective materials which are robust and light which increase the productivity of the wind turbine. This work focuses on design and fabrication of wind turbine blade using lighter materials like PU foam and glass fibre and carbon fibre using rapid prototyping for a vertical axis windmill for lower wind speed ranging from 3m/s to 5m/s and using the NACA2412 blade profile with slight modification and using QBLADE software for the profile and analysis of the blade. The fabricated turbine blade weighs around 900 grams in weight which is slightly on the higher side but it has good strength and can withstand higher wind speeds and can be used in regions with wind speeds of 5m/s.

Keywords: NACA2412, wind turbine, QBLADE

I. Introduction

Energy demand is increasing every day and renewable sources of energy are being looked at to reduce the emissions from the conventional energy producing methods which use fossil fuels, wind energy is one of the least expensive renewable energy technologies currently and although the sources of wind energy are not stable and often inconsistent, it gives extra boost to the cleaner energy without emissions and the energy produced can be stored in battery bank as the storage to overcome the periods without wind power generation. The usual problem in wind turbines is the weight of the turbine blade and the design of the wind turbine blade which play important role in increasing the power output. There are many types of wind turbine blade designs already in the market; we are trying a new way to reduce the weight and to make it operational at smaller wind speeds. The micro scale wind turbine

18. Social Transportation and Control Traffic Using Software Defined Networking

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Abstract

In the first place, social data develop with time at that point involve lush information, profession a significant would as on account of data collection then cleanup. In the interim, each design on data has specific benefits yet limits due to shared transportation, yet certain insights sort single isn't effective on depicting the normal government over transportation. The total guests rule delight outfit a reasonable instrument since expedient execution about moment yet intriguing methods then techniques among correspondence yet power as a result of guests the board, especially the considered out arising late local area innovation, purported Software Defined Networking (SDN) or Named Data Networks (NDN), to be specific pleasantly in particular the ACP-based equilibrium government then organization concerning complex frameworks. In SDN, people group managers are fit in impersonation of square local area administrations through expulsion or virtualization concerning lower degree correspondence execution via decoupling the arrangement as settles on decisions comparable to where guests is dispatched (the checking plane) past the basic frameworks up to assumption prior traffic after the picked objective (the information plane). We concur with up to assumption the ideal site guests government develops basis due to Software-Defined Traffic Networking (SDTN), just like a guidance execution of counterfeit conduction frameworks among the ACP approach. This combination obviously benefits traffic local area clients yet customers correspondingly then excessively extra than those gave by means of SDN to correspondence. As a check number concerning truth, SDN offers a part absurd usefulness at that point does now not contain ventures into P, which may need to drive as per a shut circle local area organization on the grounds that better presentation, as like portrayed in the ACP-based equilibrium frameworks.

Keywords: SDN, NDN, SDTN, parallel control, forward traffic, artificial conduction.

I. Introduction

With the quickly development about sensing, computing, and networking techniques, communal media yet cell de- vices hold these days skilled a speedy growth, generating huge volumes of communal signals almost of real- time. These social signals, beside drivers' GPS coordinates, mobile phones' billing records in imitation of

19. MRAN Algorithm for identification of Non Linearity in a Dynamic System

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Abstract

This paper presents a performance analysis of Minimal Resource Allocating Network (MRAN) algorithm for identification of nonlinearity in dynamic systems for nonlinear time invariant and time varying problems. Next, methods for improving the run time performance of MRAN for real time identification of the nonlinear systems is also used. Extended Minimum Resource Allocating Network (EMRAN) which utilizes a winner neuron strategy is and its performance is also been discussed. The modification in MRAN reduces the computation to considerable reduction in the learning time with only a slight increase in the approximation error. Using the same problem the results of EMRAN is also analyzed which shows that the later is well suited for fast on-line identification of nonlinear plants such as any type of non-linearity arises in aircraft control structure.

Keywords: ANN, RBF, MRAN, EMRAN

Introduction

Neural networks can be used as nonlinear dynamic system controllers to tackle problems where conventional approaches fail and proved to be ineffective[1]. Areas like flight control[2][3] the online control learning scheme is sparse and requires a large computational load when neural network is used in practical use for online control scheme. Hence, the problem of designing fast on-line learning algorithm for practical implementation of neural control schemes remains an active research topic. For any practical application of a newly developed identification algorithms, it is important to study the real-time implementation of the algorithm and the same study is undertaken for the MRAN algorithm. Based on the analysis, an extension to MRAN called Extended MRAN (EMRAN) is proposed. The focus is to reduce the computation load of the MRAN and to realize a scheme for fast on-line identification.

I. Neural Networks

The human brain is a remarkable parallel computer which is source of natural intelligence. The incomplete information is processed by the brain at a rapid rate. Nerve cells in the human body functions about 10^5 times slower than electronic circuit gates, whereas human brains process auditory and visual information much faster than modern computers. Many researchers, Inspired by biological nervous systems,

20. Renwable Based Savvy Home Control Utilizing Current Innovation

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Abstract

Quite possibly the main errands of today present day innovation is to limit the force utilization utilized in everyday homegrown application [1]. In this paper, the point is to limit power utilization utilized by homegrown applications, for example, lighting and devotee of shrewd home by amplifying energy saving through Bluetooth innovation[2].

In the present culture utilization of environmentally friendly power to control the battery is broadly utilized and this paper likewise utilizes the innovation to limit the utilization of power in standard with brilliant home for its dependable presentation with current programming (MPLAB IDE).

In this paper point by point clarification is given about brilliant home the proposed lighting framework where various sensors are utilized to recognize the encompassing temperature, light power, room inhabitance and so on, for consequently controlling the exchanging diminishing activity of Drove and speed varieties of fan.

The model plainly exhibits the outcomes with more agreeable, secure, efficient and it is adaptable, solid for the shrewd home in limiting the energy utilization.

Keyword: PWM, PIC, PIR, LDR, PV Panel

I. INTRODUCTION

The power consumption over the years has gone up rapidly in both domestic as well as industrial areas due to increase in population and comfort living, due to which maximum demand of consumer also increases. It is complex to reach maximum demand of consumer by generating station. One of the reasons for this is not utilizing the renewable energy. And due to the waste of this energy there is huge demand of power. This smart home overcomes the problem of the over power consumption and also gives an idea of proper utilization of the Solar energy.

21. E-Learning Made Easy System (ELMES) – An Approach for the Development of more Effective Learning Platform for Small-to-Medium Sized Enterprises (SMEs)

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Abstract

As e-learning and technologies advanced significantly, practitioners and academics must find new ways to make the most of this rapid development. In the past, re- search development in this area was mainly focused solely on technological aspects and more recently, on e-learning and technologies for individualized learning. Much work has been done in this area to enhance e-learning systems. In this re-search, we proposed that an ecological and holistic approach is required for an improved learning environment. To do this, the concept of ecosystem will be explained, followed by a rationalization of this application to learning and e-learning. A definition to learning ecosystem (LES) is provided and this generalized definition is further applied to the e-learning ecosystem (ELES). Hereafter an identification and examination of the e-learning ecosystem will be presented in detail. Finally, an application of the e-learning ecosystem in small-to-medium sized organisations (SMEs) will be discussed. Prior to this, an overview on the usage of e-learning in SMEs will also be given. We conclude by highlighting the need to emphasize on the ecological and holistic approach for the development of more effective learning environments.

Keywords: Environment, Learning system, e-learning, e-learning ecosystem, SMEs, e-learning model

I. Introduction

Although e-learning systems and technologies have evolved considerably and matured somewhat since the inception, practitioners and academics must continue to be attentive in the way they apply technology and construct e-learning contents. They must continuously consider new ideas, new learning strategies and capitalize on the modern technology in order to accommodate the preferred learning styles of the diverse student cohorts involved in e-learning. Over the past few years, many have attempted to develop e-learning systems with the aim to make learning more

22. Raspberrry Pi Android Based Intelligent Pod for Military Purpose

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Abstract

In today's world Indian border military force faces a massive destruction especially in border. Intruders cross our borders unknowingly. It is not possible for our soldiers to keep a watch at the borders every moment. Hence this project overcomes the above circumstances. In this proposal, a POD which helps to enter restricted areas, move and place wherever the object wants to go. The requirement in security is the ability to automatically detect the trespasser in borders. Security systems uses PIR sensor to detect intrusion to inform the control room and to empower security personnel to track the trespasser. From the server an alarm triggers using buzzers and the snapshot will be sent to the soldiers nearby with the accurate distance using mail. In this paper we propose an autonomous intelligent pod which identifies trespasser using PIR motion sensor, alerts security personnel by e-mail and captures image of trespasser using raspberry pi camera in raspberry pi device and mail this image to specified e-mail id using Android based application. This development enables the security personnel to effectively detect the intruder.

Keywords: PIR motion sensor, Android, Autonomous POD, raspberry pi

I. Introduction

As we said above Indian border military force facing a huge destruction in Pakistan, china, Nepal, Bhutan, Myanmar, Sri-Lanka and Bangladesh. Tensions rise between nuclear neighbors after deadly raid on army base close to disputed border with Pakistan.

Highly trained militants on what are essentially suicide missions – died in the three-hour assault on the base at Uri late September and seven Indian soldiers killed in attack on army base, Nagrota. Police say four gunmen also killed during early morning raid on Nagrota army base in Indian occupied Kashmir, near the militarized "line of control" that divides Indian Kashmir from the Pakistan-controlled side. The Pathankot attack was a terrorist attack committed on 2 January 2016 by a heavily armed team which attacked the Pathankot air force station, part of the western air command of the Indian air force. The recent news is almost many soldiers were killed by Pakistani army and merely about soldiers injured, some critically. If this situation continues, then there's going to be a massive destruction in Indian border line force. Almost all the