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Flow and Heat Transfer Analysis of a Thin Film Ferromagnetic Liquid over an Unsteady Stretching Sheet

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Abstract: A two-dimensional, unsteady flow of a thin layer of ferromagnetic liquid over a stretching sheet is considered. The flow is exposed to an external magnetic field in the direction of the stretching sheet. The boundary layer equations with the associated boundary conditions are transformed into ODEs using suitable similarity transformations. The resultant system of ODEs is numerically solved using the shooting technique by appropriately guessing the initial values and then correcting them by the Newton-Raphson scheme. The effects of the dimensionless parameters on the flow and heat exchange characteristics are graphically analyzed. It is found that the thickness of the film reduces with magnetization and unsteadiness parameters.

Keywords: liquid film; ferrofluid; stretching sheet; unsteady; magnetization parameter.
Nomenclature: b-stretching rate; C_{vh}-specific heat at fixed volume and magnetic field; H-external magnetic field; h-film thickness; K_0-pyromagnetic coefficient; K^*-magnetization parameter; k-thermal conductivity; M-magnetization field; Pr-Prandtl number; S-non-dimensional unsteadiness parameter; T-Temperature; T_{ref} -reference temperature; T_s-surface temperature; t-Time; u-horizontal velocity component; v-vertical velocity component; x-horizontal coordinate; y-vertical coordinate; α-constant; μ-dynamic viscosity; β-dimensionless film thickness; θ-dimensionless temperature; ρ-density; ν-kinematic viscosity; μ_0-magnetic permeability; ψ-stream function.

1. Introduction

Analysis of flow and heat transfer in the liquid film is of immense interest among researchers because of its wide range of applications in industries such as the design of heat exchangers, polymer extrusion processes, process and manufacturing industries, metal casting, steel industries, chemical processing, coating process and so on. Most flow problems relevant to the polymer extrusion process are induced by the stretching motion of a flat elastic sheet. The knowledge of momentum and heat transport in such a process is crucial as the way the sheet is stretched and/or cooled decides the properties of the final product. Proper choice of the coolant is decisive because it affects the cooling rate and spoils the desired quality and characteristics of the end product. Because of such applications, Crane [1] was the first to study the stretching sheet problem in which the velocity was assumed to vary a linear function of the

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Exploring the intermolecular interactions in Co-crystals of 4-cyanopyridine with 4-bromobenzoic acid: Experimental and computational methods

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ABSTRACT

In present work, we have performed synthesis, quantitative and qualitative analysis of the different intermolecular interactions present in 4-Cyanopyridine:4-bromobenzoic acid(1:1) Co-crystal. The single crystal X-ray diffraction confirms the Co-crystal crystallizes in the *P* 1 space group with one molecule of 4-cyanopyridine and 4-bromobenzoic acid in the asymmetric unit. The Co-crystal is mainly stabilized by presence of strong C-H...O and O-H...N interactions. Computational studies confirms, along with strong hydrogen bonds C-H...Br, C-H...N, N...Br and π...π interactions plays a significant role in stabilizing the crystal packing. Lattice energy of the compound is calculated using PIXEL method. Hirshfeld surface analysis and fingerprint plots helped in analysing percentage contribution of each intermolecular interaction towards crystal packing. Topological properties of intermolecular interactions are studied based on QTAIM approach. CSD studies shows presence of isostructural polymorph of 4-Cyanopyridine:4-bromobenzoic acid Co-crystal. Later both polymorphs are compared using different computational tools.

Selection and peer-review under responsibility of the scientific committee of the International Conference on Applied Research in Engineering Sciences.

1. Introduction

Co-crystallization is one of the method for enhancing physiochemical properties of active pharmaceutical ingredient (API) [1], which provides a platform for design and growth of pharmaceuticals [2]. Co-crystals have extensive application in pharmaceutical fields and they are also came out as energetic, optical, and semiconducting materials for their mechanical properties [3]. The Literature studies indicates, many research groups has worked on acid - pyridine synthon in the context of crystal engineering and observed numerous non-covalent interactions which play remarkable role in stabilizing the crystal structure[4-6]. For Co-crystal synthesis various Co-crystallization techniques are used but there is no well-defined method, so it is considered to as trial and error method [7]. As number of API involves many aromatic compounds which includes carboxylic acid functional group through which drug molecule will co-crystallize with co-former through hydrogen bonding. On this basis we have selected Co-crystal of 4-Cyanopyridine-4 bromobenzoic acid as a platform to understand acid-pyridine synthon as well as role of intermolecular interactions in this Co-crystal.

Along with hydrogen bonding, non-covalent interactions also plays a notable role in stabilizing the crystal structure [8]. Weak hydrogen-bonds involving C-H···X (X = O, N, Br, etc.) interactions have been studied to understand their impact on the molecular self-assembly [9]. C-H...π stacking interactions which are weaker than above mentioned interactions plays a major role in crystal packing [10,11].

Here we have presented detailed qualitative and quantitative analysis of intermolecular interactions present in 4-Cyanopyridine – 4- bromobenzoic acid Co-crystal. Analysis includes lattice energy calculation, Hirshfeld surface analysis, 2-D fingerprint plot analysis, energy framework, electrostatic potential maps and QTAIM study.

2. Methodology

2.1. Synthesis

The essential chemicals for present study were purchased from Sigma Aldrich and used without further purification. Equimolar

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Phased array and its implementations for 5G Wireless Communication: A Review

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Abstract— The design techniques, implementations and applications of the Phased array antennas are discussed in this Paper. Beamforming is the key enabler for a phased arrays which is discussed through emphasizing upon their types, advantages and disadvantages. Multiple techniques used to realize the energy and cost efficient phased arrays for 5G wireless communication are discussed in detail.
Keywords—Beamforming, Phased Array, scan sectors, subarrays

I. Introduction

Phased array antenna structure consists of many antenna elements. These antenna elements are fed in systematic way with variable time-delay or phase to each element. This variation leads to significant scanning of beams in the required angle through a space. For pattern shaping variable amplitude control is also used. Multiple elements in the array geometry results in the precise control of the radiation pattern. In 1920s and 1930s investigation started to combine the output signals from simple elements to get narrower, directive antenna patterns [1]. The earliest antenna array is the Yagi-Uda array which was containing the multiple directors along with a feed dipole and a reflector element to produce a directional pattern of beam radiating in the end-fire direction. In 1930s, electromechanical scanning was found to be practical for some applications. In 1950s, electronic scanning was introduced. Even before there were many mechanical scanners were invented and used but the technology did not support electronic scan till the use of ferrite phase shifters in 1954-1955 [2-3]. In 1960s, the solid state array

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Phased array and its implementations for 5G Wireless Communication: A Review

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Abstract— The design techniques, implementations and applications of the Phased array antennas are discussed in this Paper. Beamforming is the key enabler for a phased arrays which is discussed through emphasizing upon their types, advantages and disadvantages. Multiple techniques used to realize the energy and cost efficient phased arrays for 5G wireless communication are discussed in detail.
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Design and Performance Analysis of High Throughput and Low Power RNS-Based FIR Filter Design on FPGA

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ABSTRACT

A cost-effective finite impulse response (FIR) filter is introduced in this research work through residue number system (RNS). The moduli set selected provides the same benefit as that of the shift and add method. The implementation residue number system with reduced computational complexity, as well as high-performance finite impulse response filters that employ advanced Vivado Design Suite and Artix-7 field-programmable logic (FPL) devices, are presented in this research work. For a specified 64-tap FIR filter, a classical modulo adder tree is substituted by a binary adder with enhanced accuracy pursued by a single modulo reduction stage and as a result reducing the area constraints by approximately 18%. When compared to the three-multiplier-per-tap two's complement filter, the index arithmetic complex FIR filter that is based on the quadratic residue number system outperforms by approximately 75% and at the same time involving some LEs for filters with more than 8 taps. When compared to the traditional design, a 64-tap filter requires only 41% LEs.

KEYWORDS

FPGA, Parallel Prefix Adder, QRNS, Reconfigurable FIR Filter, Redundant-RNS

INTRODUCTION

One of the primary limiting constraints in the design of future Application Specific Integrated Circuits is output voltage. By lowering the device's price, complexity, and mass, low power consumption will improve the ASIC's flexibility. In current ASICs, Digital Signal Processing blocks are a leading cause of output power. For a long time, the residue data type has been advocated as a power-saving comparison to the conventional 2's complement number line in DSP applications. According to some studies, using Finite Impulse Response filters in the residue number system rather than the two's complement number system (TCS) can reduce power consumption. One of the most straightforward DSP elements are FIR filters. The Fig. 1 depicts a basic overview of how Residual Number System simulations can be carried out. The Chinese scientist Sun Tzu, who existed in the third century AD, used the residue number system for the first time in his Arithmetic Classic of Sun Tzu.

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An Improved Multipath Energy Aware On-Demand Routing Protocol for MANETs

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Abstract —With recent advances in the field of wireless network or Mobile Ad-hoc Networks (MANETs) technologies, usage of mobile device computing technologies is the fastest growing technology. Formerly in the wired network, telephone and cable companies provide wired access to the devices for homes and offices. Today, the tendency is to move to wireless technology. Effective MANETs come across with numerous difficulties and challenges. If a packet is to travel from one host to another host, it needs to pass through many interconnected networks. The accompanying challenges in the network restrict current protocols from routing in MANETs. Also, balancing energy consumption is the major design issues since nodes have restricted energy, memory, bandwidth etc. Thus, the main objective of this research is to design an energy efficient protocol to minimize the energy consumption in MANETs. The main contribution of this research work includes the development of the new routing protocol called Energy Aware on Demand Routing (EADR) protocol for MANETs. This routing protocol approach is to build the new route discovery by evaluating energy consumption, packet loss, throughput and network lifetime. The protocol identification of the new route path by selection of the nodes which have the minimum energy threshold valves for its path to reach the intended destination node in network. The algorithm evaluates in minimizing the packet loss, energy consumption that increased throughput and network life time.

Index Terms—Energy minimization, EADR, mobile ad-hoc networks, network lifetime, packet loss, routing protocols, throughput

I. Introduction

Wireless networks are a perfect option for applications that demand rapid operation with services to devices at any time and from any location. The Mobile Ad-hoc Network distributes the mobile nodes at random and travels independently, due to which, it has increasing numbers of applications available [1]. The key problem with the present network is battery power constraint, the node capacity, limited bandwidth and limited transmission range. Mobile nodes transfer the packets to neighboring nodes as they connect with multiple nodes on a network, battery power is used by nodes because the paths are multi-hop and the nodes consume energy to send/receive them in a network. One alternative way to consume less energy is by budgeting energy while reducing the use of its energy in the network. The variation between the node energy rates, cost per packet, maximum node cost and time for the network partition will usually affect energy consumption, which provides the minimum energy path to reduce the overall energy consumption for the packet delivery. MANET efficiency depends on several parameters, including routing route algorithms, distributing and effective bandwidth usage and battery power. In MANET, it is possible to minimize energy usage by putting energy levels on nodes and using energy saving modes to lower network usage [2]. The system for energy management allows the energy parameters to be set so as to reduce total energy consumption. The four kinds of energy consuming modes are transmitter mode, receiver mode, idle mode and sleep mode respectively is presented in Fig. 1.

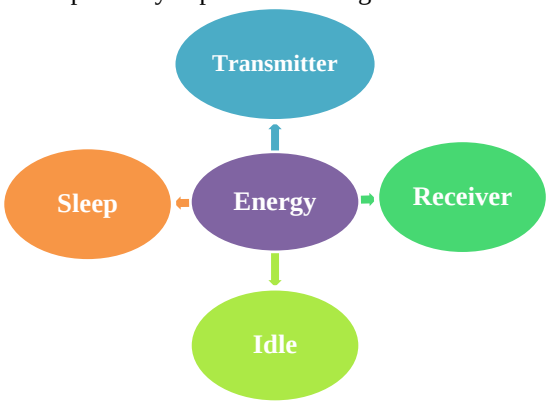

Fig. 1. Modes of energy consumption in wireless mobile ad-hoc network.

The utilization of these modes in balancing the energy load traffic is the challenging task in design of the routing protocol. A routing protocol [3] sets out how routers interact to exchange information that can make routes between any two nodes on the network of the device. The precise determining the type is established by routing algorithms. Through router has only a previous knowledge of directly connected networks. The information is exchanged by a routing protocol first by close surroundings nodes, then by the entire network. This gives routers an understanding of the network's topology. This enhances internet tolerance and high availability by the ability to route protocols to dynamically adapt to different conditions, such as disabled data lines, computers and travel data to delays.

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Secure intrusion detection system routing protocol for mobile ad-hoc network

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Abstract

With the recent advancements in the field of wireless networks orMobile Ad-hoc networks (MANETs), mobile computing is the most powerful use for network communication and connectivity. Effective networks come across with numerous difficulties. Networks need to be able to transmit data with acceptable precision from one system to another. A framework must ensure that the retrieved data is consistent with the transmitted data for most applications. If the frame between the two nodes is distorted in the data-link layer, it must be corrected before having driven to other nodes. However, most protocols with the link-layer simply dismiss the frame and allow the high-layer protocols to pass down the frame. In other words, information is a valuable commodity, since asset information must be protected from threats. Some applications require a network mechanism for detecting and preventing these attacks in MANETs. An important challenge in MANET is building the secure intrusion detection system in network providing security to the nodes and route paths in network. The attacks in network can threaten the security issues which have been identified in the intrusion detection system engine, later it is prevented by intrusion prevention engine in the network. A henceforth new technique to implement the security goals and prevent attacks is implemented by introducing the Secure-Intrusion Detection System (S-IDS) in the network. The research work introduced the Secure Energy Routing (SER) protocol for the MANETs. The protocol solves the issue of security in network by detecting the attacks and preventing them in the network. The simulation results show the higher packet delivery ratio and low end-to-end delay with and without attacks. The protocol performance is good in terms of its packet delivery ratio and low end-to-end delay respectively.

Previous Next

Keywords

HYDRO CHEMICAL INVESTIGATION OF GROUNDWATER QUALITY AND DEFLUORIDATION BY HERBAL METHOD

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Abstract

Hydro chemical investigation of the regions which are affected by concentration of more amount of fluoride content in groundwater is required to be examined. To remove fluoride content present in water by different methods of defluoridation. Here one of the most efficient methods is being implemented, that is herbal method. Which turns to be more economical and easily handled by anybody. Tridox procumben plants are being used for better results. These are locally available and these can be afforded by the village people to implement in the groundwater sources to get potable water for drinking purpose. In the present study water sample is being collected from 5 different places. Based on the experiment carried it is evident that the recommended effective contact time for the activated carbon for fluoride removal is 6 hours. And the time required for filtration process of 1 liter of water is 18 minutes which can remove 35% of fluoride content.

Keywords: Hydro chemical, defluoridation, Tridox procumben plants.

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An Improved Multipath Energy Aware On-Demand Routing Protocol for MANETs

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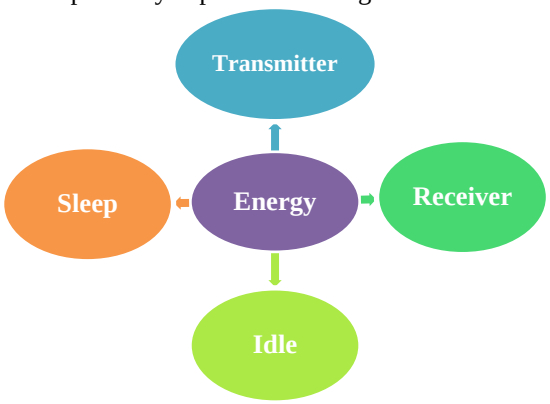

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Investigation of flexural properties of hybrid woven Carbon- Kevlar-epoxy composites added with nanosilica filler

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ABSTRACT

The main objective of this research work is to focus on the investigation of the effect of adding the nanosilica (NS) on flexural properties in woven carbon-Kevlar-epoxy hybrid composite and the better stacking sequence of fibers. The nanosilica added to the epoxy resin in various weight percentages (wt. %) 0, 0.5, 1.0, 1.5 and 2.0. The laminates have five layers of carbon and four layers of Kevlar woven fiber (5C4K), and five layers of Kevlar and four layers of carbon(5K4C). The vacuum assisted resin infusion molding (VARIM) technique was used to fabricate the laminates. The test specimens for flexural properties were prepared as ASTM D790 standard. The results of the tested specimens revealed that 0.5 wt% of nanosilica with the epoxy provides higher flexural properties as compared to other wt. % of nanosilica in both types of stacking sequence. The laminate having five layers of carbon and four layers of Kevlar woven fiber (5C4K) shows better flexural properties as compared to laminate having five layers of Kevlar and four layers of carbon(5K4C).

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1. Introduction

In composites, two or more different types of materials are mixed in a specific ratio to take advantage of materials used in the composites. The different types of composites are polymer composites, metal matrix composites, and ceramic matrix composites. Fiber reinforced polymer composites requirements in the field of automobile, aerospace, space, marine, sports, and infrastructure industries are increasing every day due to their low weight to strength ratio, high modulus of elasticity, reduced corrosion, increasing mechanical, thermal, and optical properties.

In fiber reinforced polymer composites, the main constituting materials are fiber and matrix. Woven fiber like carbon, Kevlar, and glass are widely used as a reinforcing material in the fiber reinforced composites fabrication process. The matrix plays a vital role as a binder for fiber and also it protects them from external damage [1]. Thermosetting polymer matrix epoxy resin is commonly used in the fabrication of fiber reinforced polymer composites, since, it has high stiffness, high strength, high electrical insulation, high amenability to various methods of composite fabrication, ease of fabrication, dimensional stability, and has good water and chemical resistance characteristics also excellent heat and moisture resistance, low shrinkage, lightweight, low toxicity [2–3]. Now a greater number of research work is in progress to enhance the properties in fiber reinforced polymer composites by modifying the matrix with the addition of nanomaterials. The commonly used nanomaterials are silica [1,3–6], titania [7], aluminum oxide [8], carbon nanotube, nanoclay [9], multiwall carbon nanotube [10], halloysite [11]. The addition of nanofiller to the matrix is inexpensive and fast to modify the properties of composites. In fiber reinforced polymer composites the influence of nanofiller, reinforcement, and modification of reinforcement on the properties purely depends on the concentration, ratio, reinforcement content, and the interaction with the matrix.

The present research work concentrated is to investigate the flexural properties by the addition of nanosilica in the epoxy matrix and stacking sequence in carbon-Kevlar woven (0/90°) hybrid composite. The nanosilica addition to the epoxy matrix in different weight percentages 0, 0.5, 1.0, 1.5 and 2.0. The composite laminates were fabricated using the VARIM technique [10].

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NON-LINEAR CHANDRASEKHAR-BÉNARD CONVECTION IN TEMPERATURE-DEPENDENT VARIABLE VISCOSITY BOUSSINESQ-STOKES SUSPENSION FLUID WITH VARIABLE HEAT SOURCE/SINK

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Abstract. The generalized Lorenz model for non-linear stability of Rayleigh-Bénard magneto-convection is derived in the present paper. The Boussinesq-Stokes suspension fluid in the presence of variable viscosity (temperature-dependent viscosity) and internal heat source/sink is considered in this study. The influence of various parameters like suspended particles, applied vertical magnetic field, and the temperature-dependent heat source/sink has been analyzed. It is found that the basic state of the temperature gradient, viscosity variation, and the magnetic field can be conveniently expressed using the half-range Fourier cosine series. This facilitates to determine the analytical expression of the eigenvalue (thermal Rayleigh number) of the problem. From the analytical expression of the thermal Rayleigh number, it is evident that the Chandrasekhar number, internal Rayleigh number, Boussinesq-Stokes suspension parameters, and the thermorheological parameter influence the onset of convection. The non-linear theory involves the derivation of the generalized Lorenz model which is essentially a coupled autonomous system and is solved numerically using the classical Runge-Kutta method of the fourth order. The quantification of heat transfer is possible due to the numerical solution of the Lorenz system. It has been shown that the effect of heat source and temperature-dependent viscosity advance the onset of convection and thereby give rise to enhancing the heat transport. The Chandrasekhar number and the couple-stress parameter have stabilizing effects and reduce heat transfer. This problem has possible applications in the context of the magnetic field which influences the stability of the fluid.

Keywords: Rayleigh-Bénard convection; heat source/sink; Boussinesq-Stokes suspension; Boussinesq approximation; Lorenz model

MSC 2020: 76E30, 76W05

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Design and implementation of pervasive DA based FIR filter and feeder register based multiplier for software defined radio networks

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Abstract

Purpose – Digital signal processing (DSP) applications such as finite impulse response (FIR) filter, infinite impulse response and wavelet transformation functions are mainly constructed using multipliers and adders. The performance of any digital applications is dependent on larger size multipliers, area and power dissipation. To optimize power and area, an efficient zero product and feeder register-based multiplier (ZP and FRBM) is proposed. Another challenging task in multipliers is summation of partial products (PP), results in more delay. To address this issue, the modified parallel prefix adder (PPA) is incorporated in multiplier design. In this work, different methods are studied and analyzed for designing FIR filter, optimized with respect to area, power dissipation, speed, throughput, latency and hardware utilization.

Design/methodology/approach – The distributed arithmetic (DA)-based reconfigurable FIR design is found to be suitable filter for software-defined radio (SDR) applications. The performance of adder and multipliers in DA-FIR filter restricts the area and power dissipation due to their complexity in terms of generation of sum and carry bits. The hardware implementation time of an adder can be reduced by using PPA which is based on Ling equation. The MDA-RFIR filter is designed for higher filter length (N), i.e. N = 64 with 64 taps and this design is developed using Verilog hardware description language (HDL) and implemented on field-programmable gate array. The design is validated for SDR channel equalizer; both RFIR and SDR are integrated as single system and implemented on Artix-7 development board of part name XC7A100tCSG324.

Findings – The MDA-RFIR for N = 64 is optimized about 33% in terms of area-delay, power-speed product and energy efficiency. The theoretical and practical comparisons have been done, and the practically obtained results are compared with existing DA-RFIR designs in terms of throughput, latency, area-delay, power-speed product and energy efficiency are better about 3.5 times, 31, 45 and 29%, respectively.

Originality/value – The MDA-RFIR for N = 64 is optimized about 33% in terms of area-delay, power-speed product and energy efficiency.

Keywords SDR, Equalizer, Parallel prefix adder, DA-based multiplier, FIR filter design, Modified distributed arithmetic, LUT-based multiplier, FIR, FPGA, Reconfigurable architecture, VLSI

Paper type Research paper

1. Introduction

The performance of reconfigurable finite impulse response (FIR) filter can be analyzed in the form of complexity by using register through direct and transpose form structures to use as reuse of registers. The direct structure has less register usage allows for parallel process and easy for implementation on field-programmable gate array (FPGA). The performance

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ORIGINAL ARTICLE

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Numerical investigation of ferromagnetic liquid film flow over an unsteady stretching surface in the presence of radiation and aligned magnetic field

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Abstract

An investigation of the two-dimensional unsteady flow of a thin layer of ferromagnetic liquid past a stretching sheet is performed. The flow is exposed to an external magnetic field in the axial direction along with the thermal radiation effect. Relevant Maxwell's equations are considered together with the conservation laws of fluid dynamics to model the problem. The mathematical model is constructed using a system of partial differential equations with relevant boundary conditions, which are transformed into two-point boundary value problem (BVP) using similarity transformations. The resultant BVP is numerically solved by a shooting technique that involves Runge–Kutta–Fehlberg (RKF45) method to integrate the initial value problem and the Newton–Raphson method to refine the guessed initial values. The influence of the dimensionless parameters on the flow and heat exchange characteristics is graphically analyzed. It is found that the thickness of the film increases for higher values of the thermal radiation parameter. The thermal profile shows increasing behavior with the radiation parameter and reverse effect with the Prandtl number.

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THE EFFECT OF A MAGNETIC FIELD ON THE ONSET OF BÉNARD CONVECTION IN VARIABLE VISCOSITY COUPLE-STRESS FLUIDS USING CLASSICAL LORENZ MODEL

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Abstract. The Rayleigh-Bénard convection for a couple-stress fluid with a thermorheological effect in the presence of an applied magnetic field is studied using both linear and non-linear stability analysis. This problem discusses the three important mechanisms that control the onset of convection; namely, suspended particles, an applied magnetic field, and variable viscosity. It is found that the thermorheological parameter, the couple-stress parameter, and the Chandrasekhar number influence the onset of convection. The effect of an increase in the thermorheological parameter leads to destabilization in the system, while the Chandrasekhar number and the couple-stress parameter have the opposite effect. The generalized Lorenz's model of the problem is essentially the classical Lorenz model but with coefficients involving the impact of three mechanisms as discussed earlier. The classical Lorenz model is a fifth-order autonomous system and found to be analytically intractable. Therefore, the Lorenz system is solved numerically using the Runge-Kutta method in order to quantify heat transfer. An effect of increasing the thermorheological parameter is found to enhance heat transfer, while the couple-stress parameter and the Chandrasekhar number diminishes the same.

Keywords: Rayleigh-Bénard convection; Boussinesq-Stokes suspension; variable viscosity; magnetoconvection; Lorenz model

MSC 2020: 76E30, 76W05

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Flow and Heat Transfer Analysis of a Thin Film Ferromagnetic Liquid over an Unsteady Stretching Sheet

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Abstract: A two-dimensional, unsteady flow of a thin layer of ferromagnetic liquid over a stretching sheet is considered. The flow is exposed to an external magnetic field in the direction of the stretching sheet. The boundary layer equations with the associated boundary conditions are transformed into ODEs using suitable similarity transformations. The resultant system of ODEs is numerically solved using the shooting technique by appropriately guessing the initial values and then correcting them by the Newton-Raphson scheme. The effects of the dimensionless parameters on the flow and heat exchange characteristics are graphically analyzed. It is found that the thickness of the film reduces with magnetization and unsteadiness parameters.

Keywords: liquid film; ferrofluid; stretching sheet; unsteady; magnetization parameter.
Nomenclature: b-stretching rate; C_{vh}-specific heat at fixed volume and magnetic field; H-external magnetic field; h-film thickness; K_0-pyromagnetic coefficient; K^*-magnetization parameter; k-thermal conductivity; M-magnetization field; Pr-Prandtl number; S-non-dimensional unsteadiness parameter; T-Temperature; T_{ref} -reference temperature; T_s-surface temperature; t-Time; u-horizontal velocity component; v-vertical velocity component; x-horizontal coordinate; y-vertical coordinate; α-constant; μ-dynamic viscosity; β-dimensionless film thickness; θ-dimensionless temperature; ρ-density; ν-kinematic viscosity; μ_0-magnetic permeability; ψ-stream function.

1. Introduction

Analysis of flow and heat transfer in the liquid film is of immense interest among researchers because of its wide range of applications in industries such as the design of heat exchangers, polymer extrusion processes, process and manufacturing industries, metal casting, steel industries, chemical processing, coating process and so on. Most flow problems relevant to the polymer extrusion process are induced by the stretching motion of a flat elastic sheet. The knowledge of momentum and heat transport in such a process is crucial as the way the sheet is stretched and/or cooled decides the properties of the final product. Proper choice of the coolant is decisive because it affects the cooling rate and spoils the desired quality and characteristics of the end product. Because of such applications, Crane [1] was the first to study the stretching sheet problem in which the velocity was assumed to vary a linear function of the

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Investigation of Dynamic Mechanical Behavior of Nanosilica Filled Carbon-Kevlar-Epoxy Polymer Hybrid Nanocomposite

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Keywords:
Nanosilica, storage modulus, carbon, Kevlar, epoxy, loss modulus, nanocomposite, damping factor

ABSTRACT

Reinforcement of epoxy-carbon-Kevlar fabric composite with the addition of nanosilica has resulted in the evolution of new hybrid polymer nanocomposite, which results in the improved mechanical properties of polymer hybrid nanocomposite. The current investigation concentrated on the dynamic mechanical behavior of unfilled and nanosilica filled carbon-Kevlar-epoxy polymer composite with five and four layers of carbon and Kevlar woven fibers respectively with epoxy matrix (5C4K). Nanosilica was mixed into the epoxy at different weight percentages (wt.%) of 0, 0.5, 1.0, and 1.5. The laminates were fabricated using the vacuum-assisted resin infusion moulding (VARIM) technique. The dynamic mechanical properties, storage modulus, loss modulus, damping factor (tan delta), and glass transition temperature was investigated using a dynamic-mechanical analyzer at temperature ranging from 25 to 165 degrees Celsius. The test specimens were prepared in accordance with the ASTM D4065 standard to investigate dynamic mechanical analysis (DMA) of the hybrid polymer nanocomposite. The results of the tested specimens for dynamic mechanical behaviors of carbon-Kevlar-epoxy hybrid nanocomposites are very much influenced by the presence of nanosilica. The storage modulus, loss modulus for nanosilica added hybrid polymer composites were more than the unfilled ones and the damping factor (tan delta) was observed more in an unfilled composite.

1. INTRODUCTION

Polymer composites with nanofiller find extensive engineering applications in aerospace, space, automobile, marine, infrastructure, sports, oil and pipe industries due to enhancement in mechanical, electrical and thermal properties as compared with the conventional materials [1, 2]. These properties of polymer composites still can be enhanced by hybrid polymer composites with nanofillers. The selection of matrix material and reinforcement material plays an important role for the production of polymer composite material which will have higher mechanical, electrical and thermal properties than the conventional one.

The commonly used matrix material for the fabrication of polymer composite is epoxy resin, which has low shrinkage after curing, impact resistance, low weight, ease of manufacturing and processing, excellent chemical resistant, excellent adhesion, electrical resistant, and heat resistant properties. Reinforcement of epoxy matrix with nanofillers improves crack propagation resistance as well as the thermomechanical properties of nanocomposites [3].

Fibers are a powerful strengthening material in polymer composites. Carbon fibers has good properties like high strength, high modulus, good electrical and thermal properties. Kevlar fibers possess better properties like good impact resistance, low density and good toughness. These fibers are hydrophobic, the moisture absorption content is low [4-6].

A composite with at least two different types of fibres reinforced in a single matrix is referred to as a "hybrid polymer composite", which provide a synergistic effect such as enhanced mechanical properties. Hybrid composites offered, strength and stiffness, reduced weight/cost, better fatigue resistance, balanced thermal stability, fracture toughness, impact resistance compared to mono fiber composite [6, 7].

Hybrid Polymer nanocomposites have received very much attention from nanoscience academics and industries due to their great physical, mechanical, and tribological properties. The addition of nano-sized inorganic fillers such as silica, titania, aluminium oxide, multiwall carbon nanotube, halloysite, nanoclay has reformed the mechanical and physical properties of the hybrid polymer composites extensively [8-17].

Nanosilica is white and comes in crystalline and amorphous forms. Nanosilica is porous, has a large surface area, containing several hydroxyl groups as well as unsaturated residual bonds. The addition of nanosilica can enhance the strength, flexibility and durability of polymers composite [18-20].

The mechanical properties of polymer composites are significantly influenced by manufacturing procedures. The methods like hand layup, vacuum bagging method, vacuum assisted resin infusion molding, autoclave are mainly used for manufacturing the polymer composite. Among these methods, the mechanical properties are found to be high in autoclave method, but it is an expensive method of manufacturing. On the other hand, vacuum assisted resin infusion molding

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Research Article

Development Of Framework To Recognize Akhara-Muni Character Using Ann

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Abstract

Pattern recognition problem always be a tough task because of the different type of shape of the characters and it became more challenging when ancient script is going to recognize. Various types of Ancient scripts are available in India and Akhara-muni is one of them scripts. To recognize the Akhara-muni character with good performance is the main task of the study. Optical character recognition technique is used to recognize the Akhara-muni characters where this study is used zoning and density method to extract the features and ANN to classify the Akhara-muni character. Achieved accuracy by the proposed system is 87.24%, which is better than the previous Akhara-muni character recognition system.

Keywords- Ancient script; Akhara-muni characters; character recognition; OCR

Introduction

Handwritten character recognition is always a popular and challenging problem of the pattern recognition and it became more challenging when ancient characters has to recognize [1]. Thus, few studies can see in the area of ancient script recognition. India has a big history and script background. Various types of scripts have been used in India where these scripts are Ancient and modern scripts. Akhara-muni scripts is also one of the Ancient scripts of India. Various type documents have been written by using Akhara-muni script and these documents were handwritten. However, only one study has been completed to recognize the Akhara-muni characters in 2015 [2]. Gautam, et al. [2] used Zoning and template matching technique to recognize the ancient characters.

Akhara-muni documents can help to understand the Indian history and culture of ancient time. However, it always be a tough task to save ancient documents. Ancient documents can be damage according to the time, whether and it will be very costly to restore the content from the ancient documents. Thus, the best way to preserve ancient documents, to convert these documents in

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A Review of Deduplicate and Significance of Using Fuzzy Logic

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Abstract

It is a common practice to integrate data from more than one resource in this age of cloud and big data. It has never been this easy in the past to get such huge chunks of memory in one place and allow processing at the present high speeds. In the process of integrating data from various sources, it is seen that there could be a number of repeated tuples in the big data. This hampers all analysis and also could lead to serious problems of false implications in analysis leading to absolute failure of purpose of data research. The paper presents a review of existing novel method commonly used in detecting duplicate tuples which are different but provide same meaning to the real world. The paper discusses the need and uses of fuzzy logic to detect such records with or without the intervention of the user for confirmation for deletion or removal of such records. The degree of similarity is the key review in this paper.

Keywords

Amalgamation of cloud **Deduplication**

Degree of similarity

"Morse code Based Secured Authentication System Through Artificial Intelligence"

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ABSTRACT: The multi-disciplinary aspect of data interference,development of algorithm and use of technology for solving problems that are complex is termed as data science.For handling large volume of data, it is used by almost all the industries like educational institute,finance offices and also business organization and so on.Data science application are scattered over the wide range such as, it can be used in predicting stock movement,predicting cancer ,image processing for recognition,audio processing for speech to text prediction and so on. As in today's world, PIN and password are the most common way to get access into any system,which is not very secured and can easily be cracked. Since lot of people are facing problem regarding security,we provide a real time eye tracing for password authentication for the one who authenticate themselves using morse code. We prefer hand-off gaze-based pin entry technique.Gaze-based authentication refers to finding the eye location across sequential image frame,and tracking eye center over time.Password authentication will be done using Morse code,where numbers will be represented in dot and dashes.

KEYWORDS: Morse code, Authentication, Gazed-based, Data science, Artificial Intelligence, Password, Machine Learning, Algorithm, PIN.

I. INTRODUCTION

A continuous wave (CW) signal in the form of a Morse signal has a constant frequency and intermittent time. The permutation order of its five different sorts of codes—dot, dash, intra-code interval, inter-code interval, and code group interval—can each represent a different character. Morse signals are frequently used in military, nautical, and aviation communications because of its straightforward coding system, constrained frequency range, and robust anti-jamming properties.

Since the late 1990s, personal identification numbers (PINs) have been utilised extensively for user authentication and security. PIN codes are becoming frequently crackable, thus we prefer to take an alternative strategy. On the other hand, PIN authentication with hands-free gaze-based PIN entry techniques leaves no physical traces and so offers a safer password entry option.

The model consists of a rear database and an interface. The user can interact with the system thanks to the GUI. In order to create it, Pygame or OpenCV are used. First, the user has to register on the frontend by providing a user ID of their choosing, a password (PIN), and a keyword. The user's user id and password are required to log in after registration. The PIN is entered using Morse-style input with the aid of an internet camera. The user-entered PIN that was stored in the database during registration is compared to the stored PIN in the backend. If the PIN entered is incorrect, it will appear on the screen. If the PIN entered is accurate, the successful authentication is displayed.If the user has forgotten his password then he can use the keyword to authenticate the prevailing password with the replacing one[1].

II. RELATED WORK

In [2] authors employed real-time eye tracking for password authentication, which suggests a procedure where a smart camera is used for eye recognition and tracking for PIN identification as well as a true-time application for gaze-based PIN entry. This procedure is one of the most secure ways to confirm the password because it leaves no physical traces behind. In [3] authors suggest measuring the attention movements of a genuine expert athlete and a beginning athlete using quantitative analysis of tennis experts' eye movement skill. The players' recorded eye movements are compared and examined. Eye-tracking technology is used to record the attention movements. The main finding of this research is that beginners tend to pursue the ball for a little period of time without realising it. In [4] authors used smart-Eye Tracking System which suggest a logical eye tracking system that is designed for the elderly and persons with

AN EXPERIMENTAL INVESTIGATION ON STRENGTH CHARACTERISTICS OF STEEL FIBER REINFORCED CONCRETE WITH DIFFERENT ASPECT RATIO

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Abstract: Steel fiber-reinforced concrete was widely used in civil engineering construction as a type of vital engineering material. Steel fiber-reinforced concrete has traditionally been made using the typical mixing procedure. Because of the uneven distribution of fibre, the reinforcing of concrete's mechanical characteristics was insufficient. In this paper aspect ratio 50, 100 and combination (50+100) steel fibers are addition by volume faction in concrete for different percentage like 0%, 0.5%, 1%, 1.5% and 2%. Achieve this objective strength characteristic tests conducted are compressive, tensile and flexural strength tests are conducted. After the experimental result are observed AR 50 give good strength compare to AR 100 it indicated clearly AR increases strength goes on decreases. But combination of steel fiber AR (50 + 100) gives good strength compare to the AR 100.

Keywords: Steel fiber reinforced concrete, Aspect ratio, Compressive strength, compressive strength, split tensile strength, flexural strength

1. INTRODUCTION

Concrete is an important construction material that will be employed in a variety of projects. Because concrete is such an important building material, numerous studies have been conducted to improve its durability, hardness, quality, and strength. Along with these characteristics, it is critical to have cost-effective concrete, hence attempts have been made to achieve this. Plain concrete is strong in compression, but it is brittle in tension, with a low ductility value and poor crack resistance. Internal micro fractures were created in concrete, and when exposed to external force, their propagation will lower the tensile strength of the concrete, finally leading to brittle collapse. Cracks are common in hard materials.

1.1 Aspect Ratio

The aspect ratio, also known as fibre facet ratio, is the proportion of fibre length to diameter. Between 30 and 150 is the range. Venire Calliper equipment is used to measure the exact diameter of fibre. According to past research on this fracture, both toughness and strength will grow until the aspect ratio reaches 100. Concrete's strength diminishes slightly as it approaches 100. We're looking at 50, 100, and a hybrid ratio of 50+100 in our research.

1.2 Role of Fibers in Concrete

This section discusses the roles and relevance of various kinds of fibres. Fibers can be classified into two categories: hard intrusion and soft intrusion. Hard intrusion refers to fibres that have a greater elastic modulus than the concrete matrix. Hard incursion fibre has the benefit of being flexural as well as having a greater impact resistance rating.

1.3 Steel fiber

As we know steel fibers were classified under metallic fiber and research developments and their usages in concrete mixes got popular after 1970. Fibers may differ in size, surface texture and shape as shown in fig.1.2 and even their mechanical properties are also differed because of different manufacturing process. Ultimate strength of steel fibers may vary from 340 to 2070 MPa and sizes may vary from 1.5” to 2” length and diameter is approximately 2mm, the dosage rates per cubic yard vary from 50 to 200 pounds. Since variation in surface structure fibers may be affected in producing proper bonding strength

Cold Chain Logistics Solution Using IoT Services

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Abstract: *The main purpose of this work is to analyze the business problems faced by cold chain logistic companies like, maintaining the product quality by monitoring the environmental conditions and occupational safety. We have proposed an Internet of Things (IoT) based solution for controlling the product quality and occupational safety. The Wireless sensor network used caters to collect the real time environmental conditions and cloud services for real time data logging like- addressing fraudulent claims by consigners, real time shipment tracking, fleet management and to measure the delivery performance.*

Keywords: Data acquisition, Sensor Nodes, IoT, Platform as a service (PaaS) or application platform as a service (aPaaS), Osmosis

1. INTRODUCTION

Cold Chain logistics solution aims to provide Internet of Things (IoT) based solution to logistics services transporting perishable material over a long distance. Maintaining ambient parameters such as temperature, light and humidity happens to be a major criteria during transportation of such material [1]. The ambient temperature required to maintain the products fresh in cold chain varies from -25ºC to +10ºC[2][3]. For that, if any of the parameters within the transportation truck varies, there are high chances that such materials will be spoiled incurring huge loss to involving parties, apart from material wastage. This could lead to involved parties, consignee/consigner, to demand consignment equivalent or higher compensation from logistic companies on an account of improper handling of items during transportation. This will incur huge business and monetary loss to logistic companies. It is also noted that over exposure of workers to a cold environment may lead to severe health effects and also may cause death and injuries [3]. Around 15 workers died and 26 were injured in an unexpected ammonia leakage at a Shanghai cold storage facility [4]. Hence, it is seen that the cold chain risks not only affect the product quality but also the consumer's health, and safety of the personnel working with the cold environment. Therefore there is a need for an effective risk monitoring system to ensure occupational safety and the product quality.

The existing problem in a typical cold chain is to ensure that the products stored are handled properly in different environmental conditions and also to maintain the product quality. Any abnormal changes should be accessible by other cold chain parties. Real time monitoring and controlling is hence essential to improve the product traceability and visibility within the cold chain. The Internet of Things(IOT) is a system of interconnected objects that collects and transfers data over a wireless network without any intervention by humans[5]. IOT supports real time tracing and tracking of the products and their surrounding environment in the cold chain management[6][7].

In a broader sense, this work is aimed to provide the proof of concept (PoC) solution to cater the following needs of cold storage logistics companies:

1. **Humidity and Temperature real time data logging/tracking:** During transportation, it is critical to maintain the preset temperature and humidity inside the

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Dual Tree Wavelet Transformation Using Wavelet Filters

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Abstract

Wavelets play a vital role in EEG signal analysis. Discrete Wavelet Transform (DWT) synthesizes EEG data from time domain to wavelet domain; from the wavelet domain features are identified that are used as emotion markers. Selection of appropriate wavelet coefficients plays a vital role in feature extraction for emotion analysis. DTCWT also gives much better directional selectivity when filtering multi-dimensional signals. In this work the selection of wavelet filters for EEG signal analysis and classification is used by implementing Dual Tree Complex Wavelet Transform (DTCWT). Considering integer filters DTCWT decomposition is carried out for feature extraction from EEG data for emotion detection and recognition. Similarly, the DTCWT filters are scaled to integers and represented using 9-bit 2's complement representation for EEG signal analysis.

Keywords—Dual Tree Complex Wavelet Transform (DTCWT), Electroencephalography (EEG), EEG Classification, Emotions.

INTRODUCTION

Wavelet transform is an extension of the classic Fourier transform, as it works on a multi scale basis. This multi scale feature of the wavelet transform allows the decomposition of a signal into a number of scales, each scale representing a particular "coarseness" of the signal **[1]**. The decomposition of the signal into different scales is particularly useful if the wavelet transform is performed on an orthogonal basis. The wavelet transform decomposes a signal onto a set of basis functions called wavelets. Decomposition of an input signal into a series of successive lower resolution reference signal into their associated detail signals **[2]**. At each level, the reference signal and detail signal contain the information needed to reconstruct the reference signal at the next higher resolution level. One-dimensional Discrete Wavelet Transform can be described in terms of a filter bank as shown in Figure 1. An input signal x(n) is input to the analysis low pass filter $h_0(n)$ and the analysis high pass filter $h_1(n)$. The odd samples of the output of these filters are then discarded, corresponding to decimation by a factor of two. The multilevel analysis filter bank shown in Figure 2, has a continuous scaling function and wavelet. From the evolution of several wavelet functions, depending on their suitability and applications. There are several wavelets, such as Haar, Daubechies, Bi-orthogonal, Morlet, Coiflets, Symlet, Mexican Hat Wavelets, Shannon, B-Spline etc. Wavelet functions $\psi(t)$ of the Daubechies family are named as Db2, Db3, Db4, Db5, Db6, Db7, Db8, Db9 and Db10 wavelet. The wavelet coefficients selected for EEG data processing should be compact, regular, orthogonal or Bi-Orthogonal, Symmetric or Asymmetric and have finite vanishing moments and limited
filter coefficients.

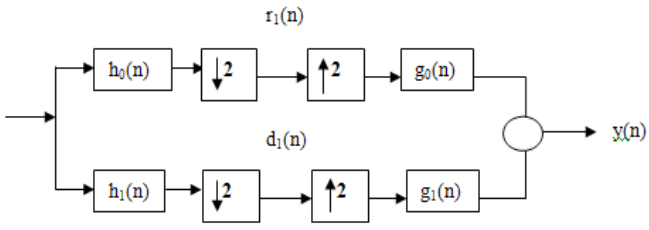

Fig. 1 Basic filter bank for wavelet transformation

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Challenges of Tracking Area Update in 5G

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Abstract: *5G is the 5th generation of mobile broadband network. A diligence towards the deployment of 5G network started in 2019, but the base work for this deployment was laid many years ago. The architecture of the 5G standard was set out in 2016. Infact 5G does not represent the majority of the mobile traffic yet. 5G is operating on new spectrum of frequency band and new technologies are to be employed on the network side and also the device end. This paper articulates an overview of 4G network architecture elements, Tracking area update and call flow in 4G, major challenges of 5G is presented and finally the conclusion of the work.*

Keywords: *LTE; Architecture; Tracking area update; LTE TAU call flow; 5G*

1. INTRODUCTION

In past few years, there is a great demand for wireless mobile communication. Many new technologies have been emerging for this reason. This serves the prime motivation for the development of wireless access technologies. It is very important to ensure the requirements of the consumer effectively. With the idea of this, there are new innovations with strict policies must be guaranteed.

The 3rd Generation Partnership project(3GPP) is a global initiative for the Mobile Broadband Standard which develops protocols for mobile telecommunication. Every release of 3GPP has standard protocols for telecom industries. An enhancement for the older technologies for better and effective usage of the services. 3GPP released standards for Long Term Evolution (4G) in its Release 8,9 with downlink data rate of 100 Mbps. Uplink data rate of 50 Mbps and latency 10 ms. The Releases -10,11,12 is the LTE - Advanced with peak data rate for downlink is 1Gbps and for uplink is 500 Mbps with latency 10 ms. The Release-13 defines further enhancement like Machine – Type Communications (MTC), MIMO in LTE-Advance technologies and it also includes License Assisted Aggregation. Release 14 and Release 15 defines a new access technology.

3GPP released new radio specifications for 5G. Release 15 is the first set of 5G standards. The description of Release 15 is – The 5G system- Phase 1. Machine Type Communication and Internet of Things. Vehicle to Everything (V2X) Communications-Phase 2. WLAN and unlicensed spectrum use, slicing logical networks, 3rd party access to 5G services. Service based architecture. Mobile Communication system for railways.

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Performance analysis of Low energy and high-speed DA-RNS based FIR filter design for SDR Applications on FPGA

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Abstract—For different applications, the Finite Impulse Response (FIR) filter is widely used in digital signal processing (DSP) applications. We exhibit a significant Residue Number System (RNS)-based FIR filter design for Software Defined Radio (SDR) filtration in this article. Including its underlying concurrency and information clustering process, the RNS provides important statistics over FIR application in specific. According to several residue computing and reverse translation, expanded bit size results in a significant performance trade-off, conversely. Through RNS replication, accompanied by conditional delay optimized reverse processing to minimize the FIR filter trade-off features with filter duration optimized Residue Number System arithmetic is proposed in this study, which involves distributed arithmetic-based residue processing. To execute the task of reverse translation and to store pre-computational properties, the suggested Residue Number System architecture makes use of built-in RAM blocks found in field-programmable gate array (FPGA) devices. The proposed FIR filter with core optimized RNS has the benefit of lowering processing latency delay while rising performance torque. Followed by FPGA hardware synthesis for different input word sizes and FIR lengths verification by the efficiency of the FIR filter core, fetal audio signal detection is performed first. The test results reveal that over the optimization procedure RNS method, a compromise in traditional RNS FIR over filter size is narrowed, as well as a substantial decrease in sophistication.

Keywords—RNS-Based Adder, Distributed Arithmetic based Multiplier, FIR, RNS, Low Energy-power product, FPGA, SDR.

I. Introduction

A Modulo converter, which is centered on circuitry processing, is perhaps the most important feature of the residue number system that has gained popularity. This investigation was the one to provide a systematic study of modulo 2n-1 variable design. Modulo differentials are implemented using non - linear VLSI components with a look-up table, i.e. via Read-only memory. On the other side, the term is originally applied to short words, but it can then be applied to longer words. To improve the performance of memory-less coefficients, and an algorithm like Booth-encoding is used to improve coefficients; the technologies of residue number systems like concurrent and scalable are used. A highly developed 2n-1 modulo multiplier, which is based on the redundant residue number scheme (RRNS), has also been selected for the extremely high range. The principles of 2n-1 integer coefficients have thus been efficiently evaluated and tested for the new modulo coefficients developments using the description architecture converter method. The 2n-1 modulo multipliers based on the Residue number scheme are commonly accepted as a faster and convenient arithmetic circuit for varied uses of signal processing, such as image processing, finite impulse response filters, interaction, cryptography, discrete cosine transform, and possible uses of the digital signal processor. The Residue number system is more advantageous than the traditional 2's signaling pathway because it is a carry-free, unbalanced set of numbers[27]. Residual Number Systems characterizes the relative co-prime integer moduli m1, m2, m3,..... MK, such that any arbitrary integer, i.e. X=x1, x2, x3,..... xk, is referenced to as vestiges of X and xi =X modulo mi (xi=|X|mi). The four primary elements of the Residual Number Systems block diagram are depicted in Figure 1: forward and reverse converters, inter modulo procedures, and mathematical streams. Forward and backward adapters are known as inter modulo processes in this instance. Reverse adapters are used to transform residue numbers into weighted numbers and conversely, Forward

A Review on Low Noise Amplifier in Biomedical Applications

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Abstract:

The wireless and smart health care monitoring systems are playing a very important role in the medical health industry. The wireless and smart health care monitoring system is one amongst leading innovative developments in the field of medical system. Using smart wireless health monitoring system we can monitor the patient's heart rate, body temperature, neural signals and any abnormal activity in the patient's body. This paper reviews and surveys the various applications of a Low Noise Amplifier (LNA) in the bio medical domain, such as wireless hearing aids , neural recording system, ECG system, EEG System, biosensor application, Medical implantable systems, etc. The design specifications of LNA for ECG monitoring system, EEG monitoring system, and neural recording systems have been analyzed.

Keywords: ***Low Noise Amplifier (LNA), CMOS, EEG, ECG***

I. Introduction :

The use of wireless and smart healthcare monitoring systems became admire technology and patient's (user) data can be collected for reviewed at anytime and anywhere in the healthcare system. A smart healthcare system provides services such as registration of patient, scheduling for consultation time with health care monitoring person, collection and management of health information of patients [1]. The general architecture of a smart and wireless healthcare monitoring system is as shown in Figure 1 [2].

Basically, the overall health care system consists of following three steps; the first step is composed of intelligent physiological sensors. The first level of the healthcare system depends upon user applications; like the motion sensor, ECG sensor, blood pressure sensor, etc. The functionality of physiological sensors is to capture biological signals and convert them into a digital form for easier processing in the subsequent stages. The second part of the wireless health monitoring system consists of network nodes which collect and processes information from physiological sensors, store the information (data) and send the information continuously to the server. The third level provides communication between the personal server and healthcare provider. The main purpose of the personal server is to process the unprocessed data from the physiological sensors and also interface with health care services using internet connection. The third section of the system is a healthcare provider who receives the data continuously from the users or patients. The data of a patient is then analyzed and collaborated into the patient's medical record. The benefit of these wireless systems is to provide information about patient in case of emergency services and for research purposes without taking any time to accumulate samples [3].

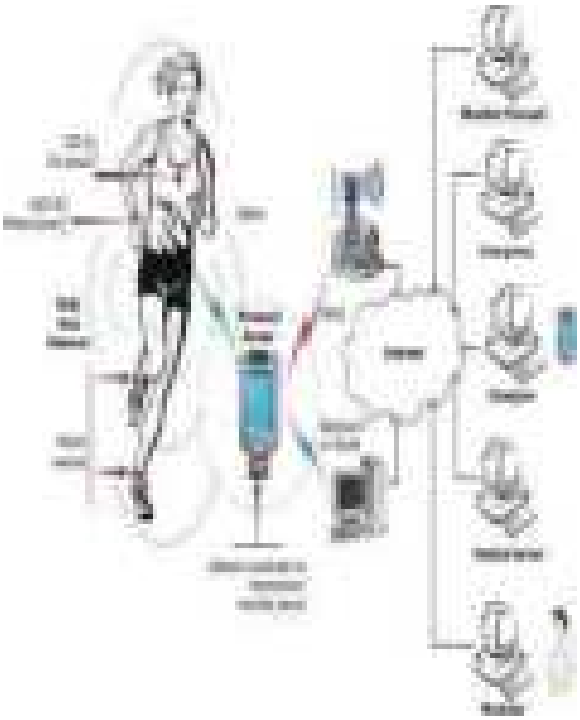

Figure 1: The architecture of Wireless and Smart Healthcare Monitoring Systems [2]

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EEG SIGNAL CLASSIFICATION USING DUAL TREE WAVELETS

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Abstract

Emotions in humans are classified into valence and arousal behaviors. Stress is one of the components that influence emotions. True emotions exhibited by humans are dominated by stress levels. Determining emotions also can provide indirect measurement of stress levels. The focus of this paper is to detect emotions and classify emotions into normal and abnormal emotions indicating true emotions and stress related emotions. In this paper Dual Tree Complex Wavelet Transform (DTCWT) is implemented for EEG classification. The four layer FFNN network designed in this work is trained to process all the 42 features, for the most significant features. The 42-30-120-16-2 network is identified to perform accurate classification of input data achieving 100% classification accuracy.

Keywords—Dual *Tree Complex Wavelet Transform (DTCWT), Electroencephalography (EEG), EEG Classification, Energy Levels, Emotions.*

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 **[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 classification. In addition to artifacts, any movement in electrodes 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 [**2].** It achieves a redundancy factor of 2^d for d-dimensional signals, which is lower than the undecimated DWT.The multidimensional (M-D) Dual-tree complex Wavelet 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

Smart and Secured Assistance for Visually Impaired Person

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***Abstract*- In this modern era when compared to normal human beings visually impaired people are facing lot of problems in their day to day life. They can walk independently in their own house, but when it comes to other aspects like going out for shops or other things, biggest problem they face is navigation. For this, they have to depend on someone for help or they have to depend on a stick. Every time they cannot depend on someone as it makes the blind feel uncomfortable. Sometimes they go out without informing the caretakers. This becomes a headache for caretakers to find them. In order to find a solution, this prototype has been proposed. It helps the visually impaired person in terms of navigation so that he can walk with ease without seeking help. Caretakers can track this person at the time of emergency like accidents. Nearby hospitals will also be informed through call and message so that they can come and attend the person at the time of emergency. This will help both blind and the caretaker.**

Keywords: **Visually impaired, Caretakers, Hospital, Navigation, Problems.**

I. Introduction

As per World Health Organization statistics there are 2.2 billion people across the globe are suffering due to vision impairment. In this 1 billion people has the vision impairment which can be cured, but those who are facing complete blindness will face severe problems. This complete blindness may be from birth or due to accidents. These people are facing problems regarding navigation as well as climbing stairs. To overcome this problem many smart sticks have been developed to find obstacles, water level etc. In addition to this to give more safety to the blind person this prototype has been proposed. The objective of the prototype is to detect the obstacles in three directions (front, left, right), living things which is coming in front of him and the staircase which is present ahead of him. It informs about the obstacle to the blind person which might harm him. Sometimes there are chances that stick would fall off by mistake. In this case, if suppose stick is fallen from his hand by mistake buzzer will buzz continuously so that he can pick his stick with the help of sound. This prototype has also added advantage that if the blind person is met with the accident his specific location with the help of accelerometer sensor we can find the axis in which axis the stick is fallen. At this point image would be captured and sent to the nearest hospital as well as the caretaker of the visually impaired person along with the current location. Call will also be made to the nearby hospitals so that they can come and rescue the person. This helps the blind person to walk with ease without facing much difficulty and makes them independent in navigation.

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Novel Approach to Smart power generation in Smart vehicle

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Abstract

In recent years most countries are trying to reduce the use of fossil fuel as a source of energy. Hence green energy industry is getting more and more attentions. The vehicle with the generating power is a miracle. This paper shows the use of renewable energy. Here the renewable energy is used in automotive systems as an alternative source of energy which can be used to drive the appliances present in the car without affecting the present environment neither causing pollution.

Keywords: wind, solar, piezo, Electric Vehicle(EV)

1. Introduction

Nowadays, fossil fuels are being consumed at an exponential rate. So, there is a need of an alternative energy to overcome the present rate of fuel consumption. Our main objective is to reduce the use of fossil fuels and improving the consumption of renewable energy. This idea can be utilized to solve the problem of Global warming.

The paper have proposed a design in which energies such as wind, solar and frictional forces supports our idea in the conversion of these energies into electrical energy.

The wind turbine which is used in converting the rotatory motion of the blades into electrical energy is applied in our design. Here, this electrical energy is stored in the form of charges in the battery. Then, the sound energy which is available in our environment can also be used in producing the electrical energy. The shock absorber in the vehicles produces a frictional force. Using transducers, these frictions can also generate the energy.

The energy generated will be available to recharge the batteries for the further use in the car. It must be done very carefully in order to meet the requirements for reliability, simplicity, portability and cost.

Electric vehicle is nowadays drawing more attention due its fuel economy, cost effective, low maintenance, etc. As it is well known one of the drawbacks of the electric vehicles is the driving range. The driving range can be increased with the help of self-generation and regeneration operation. Regenerative braking system replaces the traditional braking system in cars which produces more heat during braking. This system ensures high capability of energy storage in braking conditions Also Noise (sound) energy can be converted into viable source of electric power by using a suitable transducer. This can be done by using a various type of transducer by converting vibrations caused by noise, friction applied by break, wind energy from the fans fitted in the cabinet of AC unit of car into electrical energy. An application is proposed for the same, in which each mechanical energy can be converted to electrical energy. The generated electrical can be stored and utilized to operate the appliance fitted in the cars.

2.Litsssserature Survey

The topic of our interest for this proposed design were from the following literatures. The design of the wind turbine, conversion from sound and frictional conversion from the shock absorber were considered based on the literature survey done

The amount of voltage generated from sound produces the maximum voltage of 2.7V at a sound level of 114dB[1].

The Rack and Pinion method of conversion of pressure into voltgae[2].

The power of 900 W will be dissipated with the battery voltage of 28.45 V[3].

The practical conversion of wind energy was calculated and found that 35W can be produced in a vehicle while moving at a speed of 60mph[4].

Design and implementation of high-speed and low-power consumption Moore-based loopback adder on FPGA

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Abstract

Purpose – Finite impulse response (FIR) digital filters are a general element in several digital signal processing (DSP) systems. In VLSI platform, FIR is a developing filter because the complexity of design grows with the length of the FIR filter and also it has less latency. Generally, the FIR filter is designed dominated by the multiplier and adder. The conventional FIR filters occupy more area because of several numbers of adders and multipliers for filter designs.

Design/methodology/approach – To overcome this issue, the Vedic Multiplier (VM) and Moore-based LoopBack Adder (MLBA) approach-based optimal FIR filter were designed in this research. Normally, the coefficient has been generated manually, which performs the FIR filter operation. So, the coefficient was generated from the MATLAB filter design and analysis tool. All pass coefficient was introduced in this research, which performs the processing element (PE). The VM approach was utilized in the PE to multiply the filter inputs and coefficients. This research employs the Moore-based LBA (MLBA) in the accumulator for the adding output of the PE. An MLBA approach is a significantly reduced area and increases speed by applying a looping transform function. Here, the proposed method is called a VM-MLBA-FIR filter. In this research, the FIR filter was done in Field Programmable Gate Array (FPGA) Xilinx by using Verilog code on various Virtex devices.

Findings – The experiment results showed that VM-MLBA-FIR filter reduced 26.88% of device utilization and 0.32 W of minimum power consumption compared to the existing PSA-FIR filter.

Originality/value – The experiment results showed that VM-MLBA-FIR filter reduced 26.88% of device utilization and 0.32 W of minimum power consumption compared to the existing PSA-FIR filter.

Keywords Finite impulse response, Moore based loopback adder, Processing element, Vedic multiplier, CSLA adder

Paper type Research paper

1. Introduction

In the past few days, digital filter design (DFD) is one of the interesting research topics because the researchers are concentrated in this field. The IIR filter designs are unstable because due to the non-linear phase and recursive architecture (Barsainya *et al.*, 2017; Bindima and Elias, 2017; Srivatsan and Venkatesan, 2019). FIR filters are frequently used in different kinds of applications such as wireless, signal and audio. Mainly FIR filters are operated at low power mode and less complexity which helps for the researchers to develop the various applications (Dhabal and Venkateswaran, 2017; Harize *et al.*, 2013; Mohanty *et al.*, 2016; Sanchez *et al.*, 2019).

In past decades, many researchers developed an efficient FIR filter design for higher-level applications. Among these, some filter designs are described as follows. FIR filter is implemented based on the Genetic Algorithm (GA) to overcome the integer programming issue. But, the area is so high due to the usage of the structural adders (Chen *et al.*, 2018). In Bhat *et al.* (2015), less-power FIR filter design is implemented on the FPGA platform for wireless communication applications, but it consumed more hardware cost (Tsao and Choi, 2010). In Mittal *et al.* (2017), the FIR filter required a high sampling rate which complicated the filter operation. Keeping the above drawbacks in mind, this research work has been carried

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FEATURE CLASSIFICATION OF EEG SIGNALS USING NEURAL NETWORKS

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Abstract — EEG signal classification is carried out considering neural network algorithms. The wavelet energy features that have been identified considering all bands and from all electrodes are analyzed. From the analysis, two groups of bands are formulated and two different networks are designed: Coarse classifier and Fine classifier. For the coarse classifier, 15 energy features are processed by the neural network structure and classification is carried out to determine the EEG data is normal or abnormal. The 15-20-6-6 and 15-5-1-1 is found to achieve 100% classification accuracy. EEG data that are also in the low frequency band are also considered in this work for classification. 16 wavelet energy features from the DWT sub bands are identified and are processed by the fine classifier. The 16-15-1-1 network is found to achieve 100% accuracy in classification. Based on the results presented in this chapter, it is recommended to use both classifier structures for EEG signal classification. In the next chapter, EEG signal classification based on DTCWT is presented

Keywords—Dual Tree Complex Wavelet Transform (DTCWT), Electroencephalography (EEG), EEG Classification, Emotions**.**

I. INTRODUCTION

Classification of EEG data into normal and abnormal emotions is carried out using neural network algorithm. The input to neural network algorithm is the feature vectors obtained from DWT decomposition. The output of the network is the classification of feature vector. The problem being addressed in this chapter is design of suitable and efficient neural network structure that is capable of accurately classifying the input feature vector into two categories of output. The neural network structure comprises of neurons, network functions and interconnection of neurons. The design of network connection connecting neurons in multiple layers, identification of optimum number neurons per layer, number of layers and network activation function for each neuron are the major challenges that are being addressed in this chapter. The primary objective is design and validation of neural network structure that can accurately classify DWT feature vector indicating the emotions in EEG as normal and abnormal. Neural Networks (NN) have a large number of highly interconnected processing elements called neurons, which usually operate in parallel and in regular architectures. The collective behavior of neurons realizes a function for which they are being trained. The connection of neurons in a given pattern of interest defines neural network architecture. Every neuron is characterized by weights, biases and activation function. The block diagram of a neuron model is shown in Figure 1. The neuron model consists of a set of synapses or connecting links, each of which is characterized by a weight. The signal X_j at the input is multiplied by weight W_{kj}(k and j are integers that represents the number of neurons and number of input signals). An adder for summing the synaptic weight multiplied input signals and activation function for limiting the amplitude of the neuron. Neuron k is described mathematically as shown in Eq. (1) and Eq. (2)

$$U_k=\sum_{j=1}^{m} W_{kj}X_j \qquad (1)$$

$$y_k= \varphi(u_k b_k) \qquad (2)$$

Where, $\{x_1, x_k,\ldots\ldots\ldots\ldots x_m\}$ is the input, $\{W_{k1},W_{kj}\ldots\ldots\ldots\ldots\ldots\ldots\ldots W_{km}\}$ is the weights of neuron k, b_k is the bias, U_k is the output of the adder, φ(.) is the activation function and y_k is the output of the neuron.

RFID BASED SMART CAR PARKING SYSTEM USING IOT

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Abstract- Now a days the use of vehicles is increasing day by day, the major problem in densely populated areas is lack of parking availability. The RFID technique is the mostly used technique to overcome or eradicate the cause. The parking areas in remote areas like malls, parks and other public places as well. This paper forecasts all the possible establishes a client server communication that enables the user for remote communication regarding availability of parking slots from distance. In order to enhance a mobile friendly environment an website is being developed that gives prior information to the user about the availability of parking slot and thereby enabling them to book the slot for parking from a distance and the slot remains booked for a period of half an hour there by waits for the user to arrive until the specified time is reached. This can be implemented in shopping malls where usually traffic problems arise due to lack or unavailability of parking.

Keywords: Parking slot, RFID, IOT, Web Server

I. INTRODUCTION

The metropolitan areas have seen an enormous growth in human population as well as in transportation and movement of vehicles. With shrinking spaces, operating a busy & expensive parking lot having multiple gate scan pose a significant challenge. The parking area has to be secure, with barrier-enforced entrance and exit. With larger number of families exceeding the total number of vehicles, the parking scenario is falling short of the current requirements in the country. In context to urban transport system, as the use of number of motor vehicles in transport systems went up, the issue regarding parking is one of the major concerns in terms of space occupation. In United States rising traffic issue is an irresistible one, so that they have planned to reduce traffic to automate parking system by delivering prior information to the user using an web page.

With RFID vehicle tracking system there is high identification accuracy, parking areas or gated communities can manage their vehicles efficiently without human intervention as well as easy in-and-out access for drivers and with low deployment and operation cost. RFID's also offers a solution for parking peoples as they require the ability to monitor and record not only access and exit to parking facilities but also log and bill back parking charge customer.

II. EXISTING METHODOLOGY

The existing methodology aims to use Radio Frequency Identification (RFID) technology in automation of vehicle parking system in mall/building. This project also provides an efficient and an alternative method to coin operated meters to pay and display tickets. Simple and cost effective to implement this project as it is a standalone system or alongside traditional parking payment systems to eliminate fraud and reduce cash handling. An Smart Parking System (SPS) which enables the user to find the nearest parking area and gives availability of parking slots in that respective parking area. And it mainly focus on reducing the time in finding the parking lots and also it avoids the unnecessary travelling through filled parking lots in a parking area. Developing an android app enables to create a mobile friendly environment so that allocated and remaining parking lots can be easily viewed from distances so that accumulation of the traffic in a particular area can be avoided. The idea behind this Android Application is to help the user analyze areas where parking is available and number of slots free in that area and enables them to prebook the slot.

Non-linear Rayleigh-Benard Magnetoconvection in Temperature-sensitive Newtonian Liquids with Variable Heat Source

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Keywords: Rayleigh-Benard convection, Lorenz model, Magnetic eld, Temperature-sensitive Newtonian liquids

ABSTRACT The present paper aims at weak non-linear stability analysis followed by linear analysis of nite-amplitude Rayleigh-Benard magneto convection problem in an electrically conducting Newtonian liquid with heat source/sink. It is shown that the internal Rayleigh number, ther- morheological parameter, and the Chandrasekhar number in uence the onset of convection. The generalized Lorenz model derived for the prob- lem is essentially the classical Lorenz model but with some coecient depending on the variable heat source (sink), viscosity, and the applied magnetic eld. The result of the parameters' in uence on the critical Rayleigh number explains their in uence on the Nusselt number. It is found that an increasing strength of the magnetic eld is to stabilize the system and diminishes heat transport whereas the heat source and variable viscosity in-tandem to work system unstable and enhances heat transfer.

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RESEARCH ARTICLE

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Rayleigh–Bénard and Bénard–Marangoni magnetoconvection in variable viscosity finitely conducting liquids

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Abstract

The thermorheological effect on magneto-Bénard-convection is studied numerically in fluids with finite electrical conductivity. A nonlinear thermorheological equation is considered in the problem. The results are compared with the classical approach of constant viscosity, which depicts the fact that the effect of increasing the strength of the magnetic field is to delay the onset of convection. The magnetic field is shown to have a rheostatic influence on convective instabilities. The results obtained by the study have possible applications in the field of astrophysics, sunspots, and in space applications under microgravity.

KEYWORDS

magnetoconvection, Rayleigh–Bénard and Bénard–Marangoni, thermorheological effect

1 | INTRODUCTION

Instability occurs due to gravitational force, viscous force, surface tension gradient, temperature difference, and external forces like magnetic field, and rotation. These play a very important role in understanding the physical problems that appear in industries, science, and technology. Applications of these are found in engineering and applied sciences, which range from contaminant transport and paper manufacturing,[1] geophysics, and petroleum engineering[2] to marine sciences.[3] Studying the characteristic of fluid flow, particularly the flow transition through porous media is very challenging and needs a lot of attention in research. The recent progress on many aspects of this topic are mentioned

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Facial emotion recognition using convolutional neural networks

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ABSTRACT

Emotional expressivity has always been a simple job for people, but computer programming is much harder to accomplish. Image emotions may be recognised by recent developments in computer vision and machine learning. In this article, we present a new method to detect face emotion. Use neural networks convolutionary (FERC). The FERC is based on a CNN network of two parts: the first portion removed the backdrop of the image, the second part removed the face vector. The expressional vector (EV) is utilised in the FERC model to detect the fve different kinds of regular facial expressions. The double-level CNN is continuous and the weights and exponent values of the final perception layer vary with each iteration. In that it improves accuracy, FERC varies from widely utilised CNN single-level technology. Moreover, EV generation prevents the development of a number of issues before a new background removal process is used (for example distance from the camera).

Selection and peer-review under responsibility of the scientific committee of the International Conference on Nanoelectronics, Nanophotonics, Nanomaterials, Nanobioscience & Nanotechnology.

1. Introduction

In understanding and recognising emotion, facial expressions play a crucial role. Even the word “interface” indicates how crucial the face of communication is Between two entities. between two entities. Studies have shown that reading Facial expressions may change the interpretation substantially what is being said and manage the flow of a discussion. The capacity of people to discern emotions is extremely essential for successful communication; for up to 93 percent of typical communication Talk relies on an entity’s feeling. Ideal for children. Interfaces between human and computer (HCI) would want Man’s emotion can be read by technology. This study is for this purpose how computers can correctly identify emotion from Its different sensors. This experiment was used as an experiment As a means to interpret human emotion, facial picture. The Human emotion studies may be traced back to Darwin’s pioneering and has drawn a lot since then Researchers in this field. Seven fundamental emotions are universal To people. To people. Neutral, furious, disgusting, fearful, Happy, sad and surprising, and these fundamental emotions may be Recognized from the face of a human being. This study offers an efficient method to identify neutral, happy, sad and During the last decades, several techniques for emotional identification have been suggested. Many methods were proposed for the development of systems that can extremely effectively identify emotions. Computer applications may communicate better by altering answers in different encounters depending on human users’ emotional state. A person’s mood may be determined by words, expression or even gesture. The article examines the identification of expressions from the face. For the identification of facial emotions, conventional methods typically regard a face image that is separated from an information image and facial segments or milestones are identified in the facial districts. After that various spatial and worldly features are isolated from these face parts. Lastly, a classifier, for example, is trained at Keras library, the random forest, in order to provide recognition results.

This work is an applicable and profound model of learning. Deep learning is a well-established paradigm in the field of pattern

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PREDICTING DIABETES MELLITUS USING ARTIFICIAL NEURAL NETWORK

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Abstract

Different machine learning approaches for analysis, detection and prediction of health risks from different attributes of patient health records. Diabetes is one of the common and wide spread health issues in India. Diabetes mellitus type 2 or type2 diabetes is a long-term metabolic disorder that is considered by high insulin defiance, lack of insulin and high blood sugar levels. Several machine learning approaches such as supervised learning, clustering and regression etc., have been proposed. This paper involves an effective machine learning techniques along with its pros and cons. To analyse the prediction model a machine Learning approach of implementing of artificial Intelligence is used to analyze and make the diabetes prediction model. In this research work, a data sample of seven different features is taken to predict the possibility of diabetes. Among several algorithms of machine learning, Artificial Neural Network(ANN) was chosen for building model to predict diabetes. This model is ideal for predicting the possibility of diabetes with 87% accuracy while tested with the sample test data. This model can achieve more accuracy if it trains with large sample training data in future.

Keywords: Diabetes, Machine Learning, Artificial Neural Network, features, Classification

INTRODUCTION

The global incidence of diabetes was estimated at 422 million in the year 2014, and its prevalence among the adult population has seen in increase from 4.7 % in 1980 to 8.5 % in 2014 [1]. In 2015 alone, an estimated 1.6 million deaths worldwide were directly attributed to diabetes. In addition, diabetic patients are at a greater risk of developing cardiovascular disease, visual impairment and undergo limb amputations, as compared to a non-diabetic person. Due to the substantial socio-economic burdens not only to the effected families but the local healthcare system as well, the early detection, intervention and prevention of diabetes has become a paramount global concern related to health. Diabetes is one of deadliest diseases in the world. It is not only a disease but also a creator of different kinds of diseases like heart attack, blindness, kidney diseases, etc. The normal identifying process is that patients need to visit a diagnostic center, consult their doctor, and sit tight for a day or more to get their reports. Moreover, every time they want to get their diagnosis report, they have to waste their money in vain. Diabetes Mellitus (DM) is defined as a group of metabolic disorders mainly caused by abnormal insulin secretion and/or action. Insulin deficiency results in elevated blood glucose levels (hyperglycaemia) and impaired metabolism of carbohydrates, fat and proteins. DM is one of the most common endocrine disorders, affecting more than 200 million people worldwide. The onset of diabetes is estimated to rise dramatically in the upcoming years. DM can be divided into several distinct types. However, there are two major clinical types, type 1 diabetes (T1D) and type 2 diabetes (T2D), according to the etiopathology of the disorder. T2D appears to be the most common form of diabetes (90% of all diabetic patients), mainly characterized by insulin resistance. The main causes of T2D include lifestyle, physical activity, dietary habits and heredity, whereas T1D is thought to be due to auto immunological destruction of the Langerhans islets hosting pancreatic-β cells. T1D affects almost 10% of all diabetic patients worldwide, with 10% of them ultimately developing idiopathic diabetes. Other forms of DM, classified on the basis of insulin secretion profile and/or onset, include Gestational Diabetes, endocrinopathies, MODY (Maturity Onset Diabetes of the Young), neonatal, mitochondrial, and pregnancy diabetes. Impaired glucose tolerance (IGT) determines the abnormal insulin response in the body, and is considered one of the most important risk factors, both by the World Health Organization (WHO) and the American Diabetes Association (ADA), for

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PREDICTING DIABETES MELLITUS USING K-FOLD CROSS VALIDATION

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ABSTRACT

Different machine learning approaches for analysis, detection and prediction of health risks from different attributes of patient health records. Diabetes is one of the common and wide spread health issues in India. Diabetes mellitus type 2 or type 2 diabetes is a long-term metabolic disorder that is considered by high insulin

HYBRID RENEWABLE POWER SYSTEM DESIGN USING SOLAR, PIEZO ELECTRIC AND WIND ENERGY

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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 neither economically feasible, nor encouraged by the main actors. Further, the increases in oil prices and the unbearable impacts of this energy source on the users and on the environment, are slowly removing conventional energy solutions, such as fuel genets-based systems, from the rural development agendas. This problem can overcome by using "Hybrid Power Generation". 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 increased rapidly in recent years. This paper presents the Solar, Wind and Piezoelectric Hybrid Power system that harnesses the renewable energies in Sun and Wind and Peoples footsteps pressure 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.**

Key words: **Grid, conventional energy, Hybrid Power Generation, Renewable energy, Piezoelectric, reliability.**

1. INTRODUCTION

We all know that the world is facing a major threat of fast depletion of the reserves of Fossil fuels. Most of the energy demand in current scenario 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 we will face 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 in a better way [1]. Research has also been into the development of reliable and robust systems to harness energy from non-conventional energy resources. Among them, the wind, solar and piezo power sources have experienced a remarkably rapid growth in the past 10 years. They are pollution free sources of abundant power. With high economic growth rates and over 17 percent of the world's population, India is a significant consumer of energy resources. Despite the global financial crisis, India's energy demand continues to rise. India consumes its maximum energy in Residential, commercial and agricultural purposes in comparison to China, Japan, and Russia. Solar energy is energy from the Sun [2]. It is renewable, inexhaustible and environmental pollution free. Solar charged battery systems provide power supply for complete 24 hours a day irrespective of bad weather. By adopting the appropriate technology for the concerned geographical location, we can extract a large amount of power from solar radiations. More over solar energy is expected to be the most promising alternate source of energy. Alone, vibration energy is capable of supplying large amounts of power but its presence is highly unpredictable as it can be here one moment and gone in another. In case of wind energy availability, the power i.e. available in the wind depends on the wind speed, the density of the wind and the amount of turbulence in the wind. Wind speed is high up in the sky and low at the ground level. Similarly, solar energy is present throughout the day but solar irradiation levels vary due to sun intensity and unpredictable shadows cast by clouds, birds etc. The common inherent drawback of vibration and photovoltaic systems are their intermittent natures that make them unreliable. Similarly, the power generation from piezo-electric material is also depends on the mechanical stress i.e. vibration. Hence there is also variation in power generation.

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EEG SIGNAL CLASSIFICATION USING DUAL TREE WAVELETS

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Abstract

Emotions in humans are classified into valence and arousal behaviors. Stress is one of the components that influence emotions. True emotions exhibited by humans are dominated by stress levels. Determining emotions also can provide indirect measurement of stress levels. The focus of this paper is to detect emotions and classify emotions into normal and abnormal emotions indicating true emotions and stress related emotions. In this paper Dual Tree Complex Wavelet Transform (DTCWT) is implemented for EEG classification. The four layer FFNN network designed in this work is trained to process all the 42 features, for the most significant features. The 42-30-120-16-2 network is identified to perform accurate classification of input data achieving 100% classification accuracy.

Keywords—Dual *Tree Complex Wavelet Transform (DTCWT), Electroencephalography (EEG), EEG Classification, Energy Levels, Emotions.*

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 **[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 classification. In addition to artifacts, any movement in electrodes 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 [**2].** It achieves a redundancy factor of 2^d for d-dimensional signals, which is lower than the undecimated DWT.The multidimensional (M-D) Dual-tree complex Wavelet 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

RFID BASED SMART CAR PARKING SYSTEM USING IOT

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Abstract- Now a days the use of vehicles is increasing day by day, the major problem in densely populated areas is lack of parking availability. The RFID technique is the mostly used technique to overcome or eradicate the cause. The parking areas in remote areas like malls, parks and other public places as well. This paper forecasts all the possible establishes a client server communication that enables the user for remote communication regarding availability of parking slots from distance. In order to enhance a mobile friendly environment an website is being developed that gives prior information to the user about the availability of parking slot and thereby enabling them to book the slot for parking from a distance and the slot remains booked for a period of half an hour there by waits for the user to arrive until the specified time is reached. This can be implemented in shopping malls where usually traffic problems arise due to lack or unavailability of parking.

Keywords: Parking slot, RFID, IOT, Web Server

I. INTRODUCTION

The metropolitan areas have seen an enormous growth in human population as well as in transportation and movement of vehicles. With shrinking spaces, operating a busy & expensive parking lot having multiple gate scan pose a significant challenge. The parking area has to be secure, with barrier-enforced entrance and exit. With larger number of families exceeding the total number of vehicles, the parking scenario is falling short of the current requirements in the country. In context to urban transport system, as the use of number of motor vehicles in transport systems went up, the issue regarding parking is one of the major concerns in terms of space occupation. In United States rising traffic issue is an irresistible one, so that they have planned to reduce traffic to automate parking system by delivering prior information to the user using an web page.

With RFID vehicle tracking system there is high identification accuracy, parking areas or gated communities can manage their vehicles efficiently without human intervention as well as easy in-and-out access for drivers and with low deployment and operation cost. RFID's also offers a solution for parking peoples as they require the ability to monitor and record not only access and exit to parking facilities but also log and bill back parking charge customer.

II. EXISTING METHODOLOGY

The existing methodology aims to use Radio Frequency Identification (RFID) technology in automation of vehicle parking system in mall/building. This project also provides an efficient and an alternative method to coin operated meters to pay and display tickets. Simple and cost effective to implement this project as it is a standalone system or alongside traditional parking payment systems to eliminate fraud and reduce cash handling. An Smart Parking System (SPS) which enables the user to find the nearest parking area and gives availability of parking slots in that respective parking area. And it mainly focus on reducing the time in finding the parking lots and also it avoids the unnecessary travelling through filled parking lots in a parking area. Developing an android app enables to create a mobile friendly environment so that allocated and remaining parking lots can be easily viewed from distances so that accumulation of the traffic in a particular area can be avoided. The idea behind this Android Application is to help the user analyze areas where parking is available and number of slots free in that area and enables them to prebook the slot.

MONITORING AND CONTROLLING OF UNMANNED AERIAL VEHICLE BY ELECTRICAL ACTUATORS

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Abstract - The scope of our project is to enhanced the system in to a faster, more reliable and controlling & monitoring of the flight control system effectively by using electrical actuators & widely spread over a vast area of applications. Actuators are used in airplanes for operation of various control surfaces such as ailerons, flaps, elevators, rudders, landing gears, and other structural members for performing the flight. The performance of the manned airplane are unmanned aerial vehicle depends on the correct operation of the control surface as well as actuators, to ensure weather the system is functioning correctly, various signals are controlled and monitored. The electrical actuators are the new trend in the R&D sector of aircraft's we make use of single electrical motors (like servo motor etc…) by replacing hydraulic system. So it reduces the cost and size.

Keywords: FCS (Flight Control System), Colour- Coded Scheme, RS-422, MATLAB, GUI (Graphical user Interface)

I. INTRODUCTION

In this modern era, electric motors are widely used in many fields of engineering and also in our daily life. Specific types of electric motors are designed to meet particular applications. Remote and voltage input of an electric motor is specifically designed to aid easier user controlling and maintenance. Technology grows faster and bigger, people keen to talk about efficiency, reliability and cost, instead of using wired controls like old times, consumer now can control electrical device using wireless controller.

There are many locations where it may not be possible to have physical connections to each and every component of FCS.So it becomes necessary to have a remotely controllable system for the control of such equipment's. The automation of such system can be achieved through various controls.

Therefore, this project is proposed to develop a monitoring & control for a servo motor. This controller was developed using a Arduino board and joystick with using Esp. Wi-Fi module. With a power supply. this controller can be portable and ease the controller method within the working range. Hence, as a future electrical engineer, this is an honor and responsibility to develop and share the technology in order to improve to community life. This is how the basic idea that leads to this project of developing wireless control of flight actuators using servomotor controller.

II. BLOCK DIAGRAM

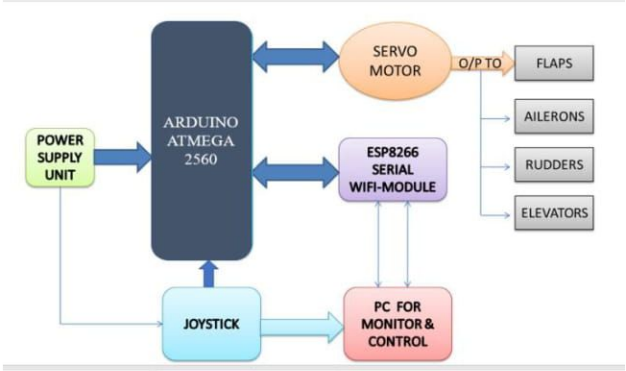

Figure 2.1: Block diagram of Unmanned Aircraft System

Low frequency Sub-band image compression using JSS Algorithm

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Abstract **- Lossy compression is compression in which some of the information from the original message sequence is lost. This means the original sequences cannot be regenerated from the compressed sequence. Just because information is lost doesn't mean the quality of the output is reduced, image is blurred. In this paper an idea for image compression, based on JPEG technique and Sequential Search Algorithm, at first using Discrete Wavelet Transform (DWT) to obtain LL sub-band, then apply JPEG technique on the LL sub-band is introduced. JPEG technique consist of; JPEG Transformation, and JPEG Coding. The LL sub-band transformed by JPEG transformation for obtaining more compression ratio. Before apply JPEG coding, this algorithm used feedbacks system for inverse JPEG transformation to get decoded LL sub-band, and then the difference between decoded LL and original LL are stored in a new matrix called D Matrix, finally the D-Matrix compressed by Sequential Search Algorithm. The Decompression algorithm consists of; Inverse JPEG transformation to get decoded LL, Sequential Search Algorithm to find D-Matrix, Add D-Matrix with the decoded LL and apply inverse DWT to get decompressed image. We also present simulation results with the help of MATLAB simulation tool**

Keywords **- Sub-image LL, Discrete Wavelet Transform(DWT), JPEG Technique, Sequential Search Algorithm**

I. INTRODUCTION

Since the mid-80s, members from both the International Telecommunication Union (ITU) and the International Organization for Standardization (ISO) have been working together to establish a joint international standard for the compression of grey scale and colour still images. This effort has been known as JPEG, the Joint Photographic Experts Group the "joint" in JPEG refers to the collaboration between ITU and ISO) [1]. Officially, JPEG corresponds to the ISO/IEC international standard 10928-1, digital compression and coding of continuous-tone (multilevel) still images or to the ITU-T Recommendation T.81. The text in both these ISO and ITU-T documents is identical. The process was such that, after evaluating a number of coding schemes, the JPEG members selected a DCT1-based method in 1988. From 1988 to 1990, the JPEG group continued its work by simulating, testing and documenting the algorithm. JPEG became a Draft International Standard (DIS) in 1991 and International Standard (IS) in 1992 [2].

Lossy compression is compression in which some of the information from the original message sequence is lost. This means the original sequences cannot be regenerated from the compressed sequence. Just because information is lost doesn't mean the quality of the output is reduced [3]. For example, random noise has very high information content, but when pre-sent in an image or a sound file, we would typically be perfectly happy to drop it. Also certain losses in images or sound might be completely imperceptible to a human viewer (e.g. the loss of very high frequencies). For this reason, Lossy compression algorithms on images can often get a factor of 2 better compressions than lossless algorithms with an imperceptible loss in quality.

However, when quality does start degrading in a noticeable way, it is important to make sure it degrades in a way that is least objectionable to the viewer (e.g., dropping random pixels is probably more objectionable than dropping some colour information). For these reasons, the ways most lossy compression techniques are used are highly dependent on the media that is being compressed [4]. Lossy compression for sound, for example, is very different than Lossy compression for images.

II. DWT AND JPEG TECHNIQUE

The transform of a signal is just another form of representing the signal. It does not change the information content present in the signal. The Wavelet Transform provides a time-frequency representation of the signal. It was developed to overcome the short coming of the Short Time Fourier Transform (STFT), which can also be used to analyse non-stationary signals.

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PREDICTING DIABETES MELLITUS USING K-FOLD CROSS VALIDATION

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ABSTRACT

Different machine learning approaches for analysis, detection and prediction of health risks from different attributes of patient health records. Diabetes is one of the common and wide spread health issues in India. Diabetes mellitus type 2 or type 2 diabetes is a long-term metabolic disorder that is considered by high insulin defiance, lack of insulin and high blood sugar levels. Several machine learning approaches such as supervised learning, clustering and regression etc., have been proposed. This paper involves an effective machine learning techniques along with its pros and cons. To analyse the prediction model a machine Learning approach of implementing of artificial Intelligence is used to analyze and make the diabetes prediction model. In this research work, a data sample of seven different features is taken to predict the possibility of diabetes. Among several algorithms of machine learning, the 10-fold cross validation method was chosen for building model to predict diabetes. This model is ideal for predicting the possibility of diabetes by achieving an accuracy of 94% while tested with the sample test data. This model can achieve more accuracy if it trains with large sample training data in future.

Keywords: Diabetes, Machine Learning, 10-fold cross-validation, features, Classification

INTRODUCTION

The global incidence of diabetes was estimated at 422 million in the year 2014, and its prevalence among the adult population has seen in increase from 4.7 % in 1980 to 8.5 % in 2014 **[1]**. In 2015 alone, an estimated 1.6 million deaths worldwide were directly attributed to diabetes. In addition, diabetic patients are at a greater risk of developing cardiovascular disease, visual impairment and undergo limb amputations, as compared to a non-diabetic person. Due to the substantial socio-economic burdens not only to the effected families but the local healthcare system as well, the early detection, intervention and prevention of diabetes has become a paramount global concern related to health. Diabetes is one of deadliest diseases in the world. It is not only a disease but also a creator of different kinds of diseases like heart attack, blindness, kidney diseases, etc. The normal identifying process is that patients need to visit a diagnostic center, consult their doctor, and sit tight for a day or more to get their reports. Moreover, every time they want to get their diagnosis report, they have to waste their money in vain. Diabetes Mellitus (DM) is defined as a group of metabolic disorders mainly caused by abnormal insulin secretion and/or action. Insulin deficiency results in elevated blood glucose levels (hyperglycemia) and impaired metabolism of carbohydrates, fat and proteins. DM is one of the most common endocrine disorders,

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PREDICTING DIABETES MELLITUS USING ARTIFICIAL NEURAL NETWORK

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Keywords: Diabetes, Machine Learning, Artificial Neural Network, features, Classification

INTRODUCTION

The global incidence of diabetes was estimated at 422 million in the year 2014, and its prevalence among the adult population has seen in increase from 4.7 % in 1980 to 8.5 % in 2014 [1]. In 2015 alone, an estimated 1.6 million deaths worldwide were directly attributed to diabetes. In addition, diabetic patients are at a greater risk of developing cardiovascular disease, visual impairment and undergo limb amputations, as compared to a non-diabetic person. Due to the substantial socio-economic burdens not only to the effected families but the local healthcare system as well, the early detection, intervention and prevention of diabetes has become a paramount global concern related to health. Diabetes is one of deadliest diseases in the world. It is not only a disease but also a creator of different kinds of diseases like heart attack, blindness, kidney diseases, etc. The normal identifying process is that patients need to visit a diagnostic center, consult their doctor, and sit tight for a day or more to get their reports. Moreover, every time they want to get their diagnosis report, they have to waste their money in vain. Diabetes Mellitus (DM) is defined as a group of metabolic disorders mainly caused by abnormal insulin secretion and/or action. Insulin deficiency results in elevated blood glucose levels (hyperglycaemia) and impaired metabolism of carbohydrates, fat and proteins. DM is one of the most common endocrine disorders, affecting more than 200 million people worldwide. The onset of diabetes is estimated to rise dramatically in the upcoming years. DM can be divided into several distinct types. However, there are two major clinical types, type 1 diabetes (T1D) and type 2 diabetes (T2D), according to the etiopathology of the disorder. T2D appears to be the most common form of diabetes (90% of all diabetic patients), mainly characterized by insulin resistance. The main causes of T2D include lifestyle, physical activity, dietary habits and heredity, whereas T1D is thought to be due to auto immunological destruction of the Langerhans islets hosting pancreatic-β cells. T1D affects almost 10% of all diabetic patients worldwide, with 10% of them ultimately developing idiopathic diabetes. Other forms of DM, classified on the basis of insulin secretion profile and/or onset, include Gestational Diabetes, endocrinopathies, MODY (Maturity Onset Diabetes of the Young), neonatal, mitochondrial, and pregnancy diabetes. Impaired glucose tolerance (IGT) determines the abnormal insulin response in the body, and is considered one of the most important risk factors, both by the World Health Organization (WHO) and the American Diabetes Association (ADA), for

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Dual Tree Wavelet Transformation Using Wavelet Filters

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Abstract

Wavelets play a vital role in EEG signal analysis. Discrete Wavelet Transform (DWT) synthesizes EEG data from time domain to wavelet domain; from the wavelet domain features are identified that are used as emotion markers. Selection of appropriate wavelet coefficients plays a vital role in feature extraction for emotion analysis. DTCWT also gives much better directional selectivity when filtering multi-dimensional signals. In this work the selection of wavelet filters for EEG signal analysis and classification is used by implementing Dual Tree Complex Wavelet Transform (DTCWT). Considering integer filters DTCWT decomposition is carried out for feature extraction from EEG data for emotion detection and recognition. Similarly, the DTCWT filters are scaled to integers and represented using 9-bit 2's complement representation for EEG signal analysis.

Keywords—Dual Tree Complex Wavelet Transform (DTCWT), Electroencephalography (EEG), EEG Classification, Emotions.

INTRODUCTION

Wavelet transform is an extension of the classic Fourier transform, as it works on a multi scale basis. This multi scale feature of the wavelet transform allows the decomposition of a signal into a number of scales, each scale representing a particular "coarseness" of the signal **[1]**. The decomposition of the signal into different scales is particularly useful if the wavelet transform is performed on an orthogonal basis. The wavelet transform decomposes a signal onto a set of basis functions called wavelets. Decomposition of an input signal into a series of successive lower resolution reference signal into their associated detail signals **[2]**. At each level, the reference signal and detail signal contain the information needed to reconstruct the reference signal at the next higher resolution level. One-dimensional Discrete Wavelet Transform can be described in terms of a filter bank as shown in Figure 1. An input signal x(n) is input to the analysis low pass filter $h_0(n)$ and the analysis high pass filter $h_1(n)$. The odd samples of the output of these filters are then discarded, corresponding to decimation by a factor of two. The multilevel analysis filter bank shown in Figure 2, has a continuous scaling function and wavelet. From the evolution of several wavelet functions, depending on their suitability and applications. There are several wavelets, such as Haar, Daubechies, Bi-orthogonal, Morlet, Coiflets, Symlet, Mexican Hat Wavelets, Shannon, B-Spline etc. Wavelet functions $\psi(t)$ of the Daubechies family are named as Db2, Db3, Db4, Db5, Db6, Db7, Db8, Db9 and Db10 wavelet. The wavelet coefficients selected for EEG data processing should be compact, regular, orthogonal or Bi-Orthogonal, Symmetric or Asymmetric and have finite vanishing moments and limited
filter coefficients.

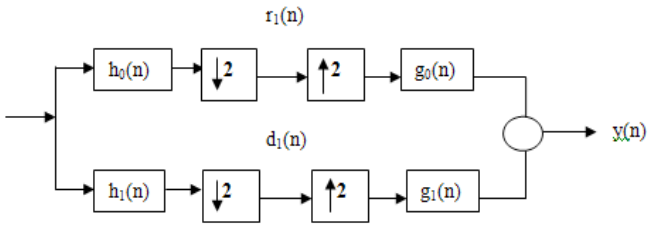

Fig. 1 Basic filter bank for wavelet transformation

FEATURE CLASSIFICATION OF EEG SIGNALS USING NEURAL NETWORKS

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Abstract — EEG signal classification is carried out considering neural network algorithms. The wavelet energy features that have been identified considering all bands and from all electrodes are analyzed. From the analysis, two groups of bands are formulated and two different networks are designed: Coarse classifier and Fine classifier. For the coarse classifier, 15 energy features are processed by the neural network structure and classification is carried out to determine the EEG data is normal or abnormal. The 15-20-6-6 and 15-5-1-1 is found to achieve 100% classification accuracy. EEG data that are also in the low frequency band are also considered in this work for classification. 16 wavelet energy features from the DWT sub bands are identified and are processed by the fine classifier. The 16-15-1-1 network is found to achieve 100% accuracy in classification. Based on the results presented in this chapter, it is recommended to use both classifier structures for EEG signal classification. In the next chapter, EEG signal classification based on DTCWT is presented

Keywords—Dual Tree Complex Wavelet Transform (DTCWT), Electroencephalography (EEG), EEG Classification, Emotions**.**

I. INTRODUCTION

Classification of EEG data into normal and abnormal emotions is carried out using neural network algorithm. The input to neural network algorithm is the feature vectors obtained from DWT decomposition. The output of the network is the classification of feature vector. The problem being addressed in this chapter is design of suitable and efficient neural network structure that is capable of accurately classifying the input feature vector into two categories of output. The neural network structure comprises of neurons, network functions and interconnection of neurons. The design of network connection connecting neurons in multiple layers, identification of optimum number neurons per layer, number of layers and network activation function for each neuron are the major challenges that are being addressed in this chapter. The primary objective is design and validation of neural network structure that can accurately classify DWT feature vector indicating the emotions in EEG as normal and abnormal. Neural Networks (NN) have a large number of highly interconnected processing elements called neurons, which usually operate in parallel and in regular architectures. The collective behavior of neurons realizes a function for which they are being trained. The connection of neurons in a given pattern of interest defines neural network architecture. Every neuron is characterized by weights, biases and activation function. The block diagram of a neuron model is shown in Figure 1. The neuron model consists of a set of synapses or connecting links, each of which is characterized by a weight. The signal X_j at the input is multiplied by weight W_{kj}(k and j are integers that represents the number of neurons and number of input signals). An adder for summing the synaptic weight multiplied input signals and activation function for limiting the amplitude of the neuron. Neuron k is described mathematically as shown in Eq. (1) and Eq. (2)

$$U_k=\sum_{j=1}^{m} W_{kj}X_j \qquad (1)$$

$$y_k= \varphi(u_k b_k) \qquad (2)$$

Where, $\{x_1, x_k,\ldots\ldots\ldots\ldots x_m\}$ is the input, $\{W_{k1},W_{kj}\ldots\ldots\ldots\ldots\ldots\ldots\ldots W_{km}\}$ is the weights of neuron k, b_k is the bias, U_k is the output of the adder, φ(.) is the activation function and y_k is the output of the neuron.

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Area Optimized Fir Filter Design Using Baugh-Wooley Multipier and Carry Look Ahead Adder

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Abstract

In present day's digital communications, Finite Impulse Response (FIR) filter plays vital role in major application of Digital Signal Processing (DSP), Speech processing based VLSI applications. Basic architecture of FIR filter consists of adders, multipliers and ROM to perform addition and multiplication for accumulation that consumes significant area. In previous research, Baugh Wooley Multiplier (BWM) and Carry Look-ahead Adder are used in Processing Element (PE) multiplication and accumulation to achieve efficient design. This architecture reduces resource area only in processing elements. However, Look Up Table(LUT) that stores coefficients utilize more LUT/Slices due to its sequential circuit nature. This paper considers the optimization of hardware resources without sacrificing the frequency response and without degrading output signal precision. An area optimized LUT based filter design is proposed to reduce filter area by using shift and complement algorithm. This proposed method reduced ROM size by 40% of total area from previous research.

Keywords: *Read only memory, Shift and complement, Field programmable gate array, Finite Impulse Response.*

I. Introduction

The filtering process is the basic need in several DSP applications such as Speech processing, wireless communication, video processing, and image processing [1]. Design for low complexity FIR filters has been raised as an intensive research area for the last four decades[2] . Digital filters plays an vital role in DSP applications due to their extraordinary performance in de-noising which is the key reasons that Digital filter has become importance in human life. In general, Filters are used for signal separation and restoration from noisy sources. Signal separation must requires when signal has been suffered with interference, noise or other signals source. This problem can be occurs on either analogue signals or digital signals. Analogue filters are fast, cheap and process the signal that has wide range of noise in both amplitude and frequency. While digital filters processes various kinds of signals with different frequency range with low cost and high accuracy. For analog filters, major parameter considerations are required to maintain accuracy, operating range and stability of the resistors and capacitors. In contrast, digital filters are having better performance in maintain accuracy, stability and restoration with compact hardware utilization. The constraints shifts to the properties of the degraded signals and the theoretical issues related their processing [3]. For better Filter performance

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Hot powder forging behavior analysis of sintered AISI 8740 PM steels for automotive application

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ABSTRACT

Present study deals with hot forging behavior of the sintered AISI 8740 powder metallurgy steels through powder metallurgy route. These steels extensively used for automobile application for its strength and elongation. Green compacts were fabricated with aspect ratios 1.28, 0.92 and 0.55. These green compacts were fabricated using appropriate die set assembly with 0.6 MN capacity Universal testing machine at 550 ± 10 MPa pressure and subsequently sintered at an elevated temperature in a protective atmosphere using Muffle furnace. Green compacts were forged and analysed with different densification and properties evaluation. Structure property correlation were analysed systematically. The fractography of all compacts show fine dimples and cleavage kind of fracture that confirms mixed mode of fracture due to the existence of multi-phase combination of different alloying elements.

Selection and Peer-review under responsibility of the scientific committee of the 2nd International Conference on Recent Advances in Materials & Manufacturing Technologies.

1. Introduction

Powder metallurgy is a science of production of metal and non-metal powders and subsequently using them individually or in various combinations of metal-metal or metal-nonmetal blends to produce components. Thus the components are made like compacting the aforementioned combination either at room or elevated temperatures and then sintered under controlled atmosphere and subsequently forged to satisfactory strength and density [1]. Basically P/M technique utilizes primary and secondary deformations. Primary P/M process includes conventional P/M techniques like compaction, sintering etc. But the secondary deformation processes involve powder forming techniques like powder extrusion, powder forging, powder rolling etc. Adequate relative density and the desired microstructure after sintering and forming are the basic preliminary requirements to many powder forming processes [2]. Application of P/M parts are found mostly in automotive, aerospace, powder tools, household appliances to nuclear fields including war-heads. Every year the international P/M awards exhibit the developing capabilities of this unique technology [3,4].

Basically, the demand of P/M product in various fields of applications led to the development of processes which provide total cost effectiveness, unique properties and an excellent quality with enhanced performance. Parts produced by traditional P/M route includes powder blending, compaction and sintering methods contain large number of pores which in turn act as sites of stress raisers or stress concentrators which cause the crack initiation and their propagation and thus the same cannot be utilized in structural applications [5–7].

During hot upset forging, the pores contained in the P/M preforms tend to collapse or get collapsed as a result, there is an improvement in density of the porous materials. Once the porosity in the P/M preforms keep reducing during upset forging, the load bearing cross-sectional areas keep on increasing. The applied stresses keep on enhancing while inducing further deformations. If the deformation is cold then strain hardening i.e., geometrical as well as natural work hardening as a result of combined effects of sustained deformation and densification in case of porous materials. Normally PM steels have wide range of structural and automobile applications. This particular series nickel chromium molybdenum

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Seismic Analysis Of Tall Rc Structures With Solid And Coupled Shear Walls

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ABSTRACT

Nowadays 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 like wind, seismic 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 shows 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

1. INTRODUCTION

In most of the developing countries, especially in Asian countries, the available area of land decreases as the growth of population increases. This in turn has resulted in an increase in the number of high rise structures with numerous architectural configuration and structural materials. Around 60% of area lies in earthquake prone zone in India. So a responsible designer should focus on behavioural pattern of earthquake and develop earthquake resistant buildings to overcome affecting seismic activities. In recent years some structural systems are considered to be rigid frame, braced frame, in filled masonry walls, shear walls, coupled shear walls, outrigger systems etc. which resist horizontal load and gravity load in high rise buildings. But due to the increase in the height of the building, the stiffness of the structure becomes more important and introduction of lateral load resisting

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ORIGINAL ARTICLE

Neotectonic evidences associated with Achankovil shear zone using morphometric analysis and field investigations

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Abstract

Several studies have considered Achankovil shear zone as NW–SE trending Precambrian crustal scale structure. Two major faults, namely Thenmala and Thenmala south faults, are identified associated with this shear zone. The present study identified NW–SE trending segmented lineaments in these zones. Major drainages and rock units surrounding these faults show NW–SE trend. The present study applied both conventional and recent geomorphic parameters to identify anomalies related to these structures. Morphometric results suggest that the area between Thenmala fault and Thenmala south fault, especially the central part, exhibits anomalies supporting active tectonism. Field investigation carried out in this zone identified continuities of NW–SE trending faults as brittle deformation in the southeastern part of the study area. Faults observed in the well sections along these lineaments show multiple slip planes and gouge formations. Morphometric results and field evidences suggest reactivation of these NW–SE structures associated with the present stress regime of peninsular India. Moreover, several instances of historic and recent earthquakes reported from this area. Considering the general trend of the seismic source zone reported in the peninsular India the NW–SE trending faults can generate a magnitude > 5.0. In view of this peak ground acceleration is calculated for a magnitude of 5.5 as the maximum credible earthquake that can be generated by these two faults. Frequent earthquakes within short duration around these faults indicate that the above-mentioned structures may be tectonically active and may generate a ground acceleration between 2.6 and 2.8 in the nearby cities.

Keywords Shear zone · Faults · Morphometric analysis · Peak ground acceleration

Introduction

Despite considering Peninsular India as tectonically stable region, it has witnessed several damaging earthquakes in the past. After 1993 Killari earthquake, numerous studies were carried out in this region to assess the seismic hazard. All these studies by various researchers are giving a common conclusion that the earthquakes predominantly happen in the weaker zones and were pre-existing (John and Rajendran 2009 and the references therein) and also are inclined to the ongoing tectonic stresses (Gowd et al. 1992). Damaging earthquakes in intra-cratonic settings always shows long return periods. Due to this long return periods, unpredictable events are occurred that too in unexpected locations which lead to massive loss of life and property. An earlier study in peninsular India considered some of the shear zones in south India are weaker enough to produce damaging earthquakes (Rajendran et al. 1996). Two examples, Desamangalam fault and Periyar fault, both are trending NW–SE (Rajendran et al. 2009). As the earthquake catalog is available only for 200 years, the identification of these sources becomes important in order to evaluate the risk posed to the region. To delineate tectonic features like lineaments and faults from peninsular India, several studies are carried out by researchers like Grady (1971), Vemban et al. (1977), Drury et al. (1984), Annon (1994), Chetty (1996), GSI (2000) and identified number of shear zones. The proposed study area is one among these zones, the NW–SE trending Achankovil shear zone (AKSZ). AKSZ is considered as a tectonic divide between Madhurai granulite block to the north and Kerala khondalite belt to the south (Dhananjaya Naidu et al. 2011). This shear zone is clearly visible in both LANDSAT and Aeromagnetic images (Reddi et al. 1988; Drury et al. 1984). The lithological variations from northern side

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Strength Characteristics of High Performance Concrete using Bagasse Ash and Slag Sand

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ABSTRACT

Today the high demand in industry is fast construction owning to the properties of strength and high durability. Over the years' concrete has seen progressive development with respect to high performance. High performance concrete (HPC) due to its own property is been largely used for construction of global infrastructure such as bridges, dams, roads etc. The main aspect of the work is to check the durability and strength of HPC. In this study, an investigation is performed to develop high performance concrete using waste materials like Bagasse ash and slag sand - from different industries - with different percentage. Cement is partially replaced by Bagasse ash and M sand by slag sand with varied concentration. Concentration of Bagasse ash replaced in cement are 0%, 8%, 12%, 16%, and 20%, as for Manufactured sand the replaced percentage of slag sand is 0%, 15%, 30%, 45% and 60%. The physical test of constitutes used in HPC has been carried out. The strength characteristics such as compression, tension and flexure are conducted for the curing period of 28 days. The result shows that, including Bagasse ash and slag in concrete increases the compressive strength up to a percentage concentration of 8% Bagasse ash and 15% slag sand, any further increase in the concentration of Bagasse ash and slag sand would decrease the overall strength of concrete.

Key words: Bagasse ash; slag sand; high performance concrete compression; flexure; tension.

1. INTRODUCTION

According to American Concrete Institute, Concrete needs special combination of uniformity and performance requirements that cannot be achieved using regular constituents and traditional mixing, placing, and curing practices. High performance concrete (HPC) is intended to design and perform higher than nominal concrete in terms of its durability and strength [1, 2]. The proportions of High-Performance Concrete (HPC) mixtures are designed and engineered towards providing high strength and durability, although composing of primarily the same materials as conventional concrete mixtures, necessary for the structural and environmental requirements of the project. The approximate compressive strength of High-strength concrete is more than or equal to 55 MPa. This value of 55 MPa is chosen, as it would require special care for production and testing of the concrete and this defined high strength value would require special structural design [3, 4, 5]. Contents of High-performance concrete would include one or more of cementitious materials namely Silica fume, ground granulated blast furnace slag or fly ash & sometimes a superplasticizer. The term 'high performance' is somewhat pretentious because the basic feature of this concrete is that it's constituents and quantities are carefully chosen so as to have specifically appropriate properties that are intended use of structure viz high strength and low penetrability[6,7,8].

Hence, High-performance concrete (HPC) does not behaves differently when compared to nominal concrete as the composition of nominal and HPC are same [9,10, 11]. The workability qualities, strength and durability are enhanced to a very high extent due to the use some admixtures and minerals viz Silica fume and Superplasticizer.

2. CHARACTERIZATION OF MATERIALS

The property of the materials is obtained from the experimental tests carried out according to IS codes for cement, bagasse ash, slag sand, manufactured sand (M-sand), 20mm and 12 mm aggregates.

A. Cement

Birla super 53 grade of OPC is used as referred in the code IS: 12269-1987 the terms of tests as per IS-4031 part 11-1988. The tests are carried out and the properties of the cement are obtained.

3. BAGASSE ASH

Bagasse ash is used as replacement material for the cement. The bagasse ash is procured from the sugar factory in K.M Doddi.

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44923	Chitrolekha International Magazine on Art and Design	UNIV	Arts & Humanities	Chitrolekha	22314822		India
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44929	Energy and Policy Research	UNIV	Science	Taylor & Francis Inc.	23815639		United States

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A Proficient Web Recommender System using Hybrid Possiblistic Fuzzy Clustering and Bayesian Model Approach

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Abstract: In day to day life, the process of projecting the correct information to the authorized person is more difficult, which makes complexity to the decision making process. Web Page Recommendation Systems (WPRS) used in various fields to identify the customer needs and to help the users to take appropriate decisions over the service or product according to his/her preference. The group of users with similar preference will be identified by using Possibilistic Fuzzy C-Means (PFCM) algorithm with an S3I Similarity Measure (SM). The proposed method will determine the gain and loss of the web users based on the web directories which can be modified by using Relevance Feedback Bayesian Network (RFBN) technique. The experimental results are conducted on the MNSBC dataset and the outcomes are compared with the existing methods like Singular Value Decomposition (SVD) methods. The method predicts the accuracy up to 85% when compared with the existing methods and the outcome results proved the effectiveness of the PFCM - RFBN method.

Keywords: Web page recommendation systems, Possibilistic fuzzy c-means, Relevance feedback Bayesian network, MNSBC dataset, Singular value decomposition.

1. Introduction

As there are very fast development and a wide range of application of the internet, World Wide Web (WWW) has become an interesting medium for pool, exchange, sharing of information and efficient channel for collaborative work [1]. The growth of web technologies and internet had extended to various fields such as education, entertainment and e-shopping. It is a tough job to satisfy the customer needs by finding the suitable needs of the users [2]. Existing recommendation systems have many complexities like recommending based on relations between the products in previous transactions and another possibility is recommending based on results given by user about a product and similar feedbacks from different users. The second kind of recommendation system is called as Collaborative Filtering (CF) methods [3]. The CF methods have several disadvantages in their nature, especially usual neural network algorithms will be based on performance and their scalability. And also the number of iterations required by this method is creating a sparsity problem if an insufficient evaluation is done by the user. Mining algorithms have been employed for resolving the sparsity problem in CF based recommendation systems [4]. These methods are introduced before user logs into the system. Hence, the user response is not delayed by this mining algorithm.

The main aim of the web mining is used to extract knowledge, such as usage logs of websites, hyperlinks between web documents and mine useful knowledge from the web data. [5]. The web is a universal information platform space which can be accessed by companies, universities, businessman etc. Generally, internet hold there are numerous sources of information like internal sources and external sources [6]. The web experience of a user can be personalized to user's taste and this action called as web personalization. The firm initiated is defined as preferences of individual rather than a group's interest in web personalization when compared to mass

Design and Development of Metal Air Battery

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ABSTRACT

With advancement of portable electronic devices and electrification of transportation rises a need for more advanced battery systems that can power these systems. Tremendous research is ongoing in new battery technologies to satisfy the energy storage requirements. Batteries with high energy density, long cycle life, and safe and low cost are the need of the hour. Metal-air batteries seem to be promising candidates for the future battery requirements because of their higher specific capacity and energy density as compared with lithium-ion batteries. The aqueous alkali electrolytes, though widely used at present, may be suitably replaced by non-aqueous electrolytes, aprotic and ionic liquids for both primary and secondary batteries. Aluminum-air power sources are receiving increased attention for applications in portable electronic devices, transportation, and energy systems. The results of this work demonstrate the feasibility of AA ECGs as portable reserve and emergency power sources, as well as power sources for electric vehicles.

Keywords: Aluminum–air batteries, Batteries, Metal-air batteries

INTRODUCTION:

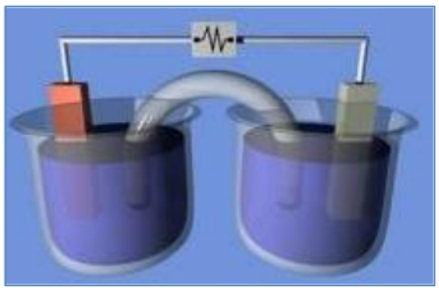

Figure 1: A voltaic cell consisting of two half-cells

During the last few decades, environmental impact of the petroleum-based transportation infrastructure, along with the fear of peak oil, has led to renewed interest inan electric transportation infrastructure. EVs differ from fossil fuel-powered vehicles. The electricity they consume can be generated from a wide range of sources, including fossil fuels, nuclear power, and renewable sources such as tidal power, solar power, hydropower, and wind power or any combination of those. The carbon footprint and other emissions of electric vehicles varies depending on the fuel and technology used for electricity generation. The electricity may then be stored on board the vehicle using a battery, flywheel, or super capacitors. Hence the developmentof different type of battery power EV started. Batteries come in many shapes and sizes, from miniature cells used to power hearing aids and wristwatches to small, thin cells

Retinal Prosthesis to Restore Sense of Vision Bionic Eye

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ABSTRACT

Retinal prostheses is a promising technique to restore eyesight from ophthalmic diseases, such as age-related macular degeneration (AMD) and retinitis pigmentosa (RP), by replacing damaged living photoreceptor cells with electronic photo devices and photo-sensing circuits. Some conventional retinal prostheses require external cameras, and the eyeball direction is different from the view direction, although some proposals are presented.
The outstanding advantages of Retinal Prosthesis are: thin-film photo-transistors are integrated to remove the external camera. To make the eyeball direction and view direction the same, a transparent substrate is employed to achieve the epiretinal implantation smartly and wireless power transfer is adopted to remove the wired connection between inside and outside of the body. It should also ensure the QOL. In this paper, the epiretinal implantation technique of the retinal prosthesis using the thin-film devices on the transparent substrate and wireless power transfer is designed. Because the transparent substrate is employed so that the illuminating light can be irradiated from one direction of the retinal prosthesis and the stimulating signal can be sent to the other direction, epiretinal implantation technique can be smartly achieved.

Keywords: Retinal prosthesis technique, thin film devices, transparent substrates, wireless power transfer.

INTRODUCTION:

Retinal prostheses is a promising technique to restore Eyesight for visually impaired people who suffer from ophthalmic diseases, such as age-related macular degeneration and retinitis pigmentosa, by replacing damaged living photoreceptor cells with electronic photo devices and photo-sensing circuits. Some of the conventional retinal prostheses require external cameras, and the eyeball direction is different from the view direction, although some proposals are presented. Implantation techniques are classified into three types, Epiretinal implantation technique, Subretinal implantation technique, Suprachoroidaltransretinal stimulation technique. The epiretinal implantation technique has a potential possibility to create high resolution of recognized image because the stimulus electrode is close to neuron cells and the stimulating signal is effectively transmitted to them.
The surgery operation is easy in comparison with the subretinal implantation technique, and the living retina is not severely damaged, although there is still an inevitable problem of the unintended stimulus of axon bundles. Some conventional retinal prostheses also require a wired connection between inside and outside of the body, and the quality of life is seriously impaired. This paper conveys epiretinal implantation technique of the retinal prosthesis using the thin-film devices on the transparent substrate and wireless power transfer is done.

RELATED WORK:

In this paper, a retinal prosthesis using thin-film devices on a transparent substrate and wireless power transfer is developed. The outstanding advantages of retinal prosthesis are: thin-film photo-transistor is integrated to remove the external camera and make the eyeball direction and view direction the same. A transparent substrate is

Vertical farming using Controlled Environment Agriculture (CEA) technology with IoT

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ABSTRACT

Vertical farming is the practice of planting the plants in vertically stacked layers which optimize the land usage as it can be implemented in an indoor environment. The main idea of vertical farming is to use a controlled-environment agriculture (CEA) technology, where all environmental factors can be controlled. Therefore, in this project, an automatic system, which consists of the Internet of Thing [IoT] is implemented in providing the controlled environment for the vertical farming. The main purpose of this project is to build a system to monitor the soil moisture and to control water content through the web browser on the laptop, mobile phone and other handheld and compact devices. The user can monitor their plant through the web browser that allows them to read the status of the soil moisture and can control the water valve to release the water to the plant whenever the reading is low or necessary. With this development, the monitoring of the vertical farming has been so helpful and the growth of the plant can be supervised from time to time without having the operator at the event.

Keywords: Index Terms—Vertical farming,soil moisturecontrol, water contentcontrol, Thingspeak,MATLAB, Internet of Thing.

INTRODUCTION:

Vertical farms are designed to grow plants in the high-tech house that normally inhabit the buildings in the middle of the city. It is a modern agricultural system that is enclosed with a controlled level of climate complete that vertical farming is no longer dependent on large-scale land use which eliminates the external environmental factors such as traditional agriculture. It is noted building that has lifted global climate without taking into account the current climate as the rainy season, winter, and so on.

Vertical farming also contributes to the reduction of burning issues during land preparation. Vertical farms could produce crops that are grown with an incredible contained environment that can be described as genetic engineering in agriculture. Agriculture is very important to the population and agriculture advantage is quite obvious from the perspective of the population. Vertical farming allows areas with the mainland to return to the natural landscape. It can also reduce pest populations.

Vertical farming can take advantage of the available and limited spaces that are idle or unused in the developed and advanced city. The existence of vertical farming allows food to be produced throughout the year. Also, it can create an environment that encourages sustainable urban life and good health for those who have chosen to live in the city. In the future, agriculture will no longer focus only on rural areas but more on agriculture in the city. Vertical farming is the practice of planting the plants in vertically stacked layers which optimize the land usage as it can be implemented in an indoor environment.

Predicting a Communication Capacity and Superficial Properties from Asynchronous Video Talk

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ABSTRACT

As artificial intelligence is utilized to perceive people personality traits, the instinctual examination of video interviews has become a dynamic territory of exploration and this paper primarily focuses on creating artificial intelligence-based start to finish cross-examine framework utilizing asynchronous video interview preparing and it likewise utilizes an engine which carries out programmed character acknowledgment it is tensor stream artificial intelligence engine, which perceives dependent on the property drawn out from asynchronous video interview and it additionally considers the genuine character scores from outward appearance.

Keywords: Artificial intelligence, video interviews, Tensor flow, outward appearance.

INTRODUCTION:

Personality traits allude to singular examples of reasoning, sentiments, and practices that can be utilized to anticipate whether an individual is a solid match for a particular activity setting or authoritative condition. Up close and personal interviews are a typical technique for work choice, and this strategy is a legitimate evaluation device for estimating relational abilities in an organized way. Also, interviewers may pass judgment on a competitor's personality traits dependent on his/her nonverbal correspondence during the interview and the judgment may impact employing proposals. Be that as it may, welcoming each employment contender to go to up close and personal interviews isn't practical.

The asynchronous video interview (AVI) has been created as another option, where occupation competitors are approached to sign in to an interview stage and record their reactions to predefined interview questions by means of webcam and receiver on their cell phone or PC, with their answers being broke down by human raters sometime in the not too distant future. As needs be, the Tensor Flow-based CNN structure is required to accomplish a decent face acknowledgment impact with regards to video interviewing. This investigation tried the legitimacy and exactness of surveying relational abilities and saw enormous five personality traits utilizing AVI-AI.

A few managers utilize self-detailed studies to quantify work candidates' characters; be that as it may, work candidates may lie when self-revealing personality traits to acquire openings for work. A few managers assess the candidates' characters from their outward appearances and other nonverbal signs during prospective employee meet-ups on the grounds that candidates have extensive trouble faking nonverbal signals. Be that as it may, it isn't reasonable for each activity candidate to go to a live prospective employee meeting face to face or take an interest in interviews led through calls or web gatherings because of the expense and time constraints.

Single direction asynchronous video interview (AVI) programming can be utilized to naturally interview work candidates at one point in time. This methodology permits businesses to audit the various media records at a later point in time. When utilizing AVI, human raters discover it subjectively testing to accurately evaluate candidates' personality traits dependent on video pictures.

A Study on Importance of Digital Signature for E-Governance

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ABSTRACT

The DigitalSignature is the method which is used to validate and authorize the content and users who are going to involve in the E-governance system. E-governance is the latest trend in many countries in which the government system is being online to deliver the governmentservices to the citizens. The services can be from Government to Citizen (G2C) and Government to Business (G2B) or Governmentto Government (G2G) or Government to Employee (G2E) or vice a versa. The vision of National e-Governance Plan (NeGP) of Government of India is to "make all Government services accessible to the common man in his locality, through Common Service Delivery Outlets and ensure efficiency, transparency and reliability of such services at affordable costs to realise the basic needs of the common man". The key objective of this vision is to provide e-services - G2B and G2C - in a ubiquitous manner. People can access any application or any scheme fromanywhere, anytime. As it comes with the word online, the biggest concern is the security issue. To provide E-authentication to theuser there are many cryptographic techniques available. This paper discusses to increase the security, reliability, and non-repudiation of the user's data or information using Digital signature. It is highly secured and well-known method to authenticate and verify an electronic transaction.

Keywords: Digital Signature, Security, E-Governance, E-Authentication, MD5 Algorithm

INTRODUCTION:

A digital signature is an electronic signature that can be used to authenticate the identity of the sender of a message or the signer of a document, and to ensure that the original content of the message or document that has been sent is unchanged. Digital signatures are easily transportable, cannot be imitated by someone else, and can be automatically time-stamped. A digital signature can be used with any kind of message, whether it is encrypted or plaintext. Thus Digital Signatures provide the following three features

- Authentication- Digital signatures are used to authenticate the source of messages. The ownership of a digital signature key is bound to a specific user and thus a valid signature shows that the message was sent by that user.
- Integrity - In many scenarios, the sender and receiver of a message need assurance that the message has not been altered during transmission. Digital Signatures provide this feature by using cryptographic message digest functions.
- Non Repudiation – Digital signatures ensure that the sender who has signed the information cannot at a later time deny having signed it.

E-governance is the platform of Information and Communication Technology where all the government services have been delivered online, exchange information electronically, communication is done over the network and electronic transactions take place instead of the traditional system. There are so many entities involved in this E-governance system like a citizen, business, and government. There are many transaction models available involving all these entities. As much secure and confidential information is being passed over the network, it is required to provide security for the same. The Digital Signature is the method which is used to validate and authorize the content and users who are going to involve in the E-governance system, the sender cannot deny that

A Study on Applying Machine Learning approach to Forecast a Software Defect

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ABSTRACT

Defects are common in software systems and can potentially cause various problems to software users. Different methods have been developed to quickly predict the most likely locations of defects in large code bases. Most of them focus on designing features (e.g. complexity metrics) that correlate with potentially defective code. Those approaches however do not sufficiently capture the syntax and different levels of semantics of source code, an important capability for building accurate prediction models.In our approach, three supervised machine learning algorithms are considered to build the model and predict the occurrence of the software bugs based on historical data by deploying the classifiers Logistic regression, Naïve Bayes, and Decision Tree. Historical data has been used to predict the future software faults by deploying the classifier algorithms and make the models a better choice for predictions using random forest ensemble classifiers and validating the models with K-Fold cross validation technique which results in the model effectively working for all the scenarios.

Keywords: software metrics, bug, classifier, cross validation, machine learning.

INTRODUCTION:

Machine Learning algorithms sprawl their application in various fields relentlessly Software Engineering is not exempted from that. Software bug prediction at the initial stages of software development improves the important aspects such as software quality, reliability, and efficiency and minimizes the development cost. In majority of software projects which are becoming increasingly large and complex programs, bugs are serious challenge for system consistency and efficiency. In our approach, three supervised machine learning algorithms are considered to build the model and predict the occurrence of the software bugs based on historical data by deploying the classifiers Logistic regression, Naïve Bayes, and Decision Tree. Historical data has been used to predict the future software faults by deploying the classifier algorithms and make the models a better choice for predictions using random forest ensemble classifiers and validating the models with K-Fold cross validation technique which results in the model effectively working for all the scenarios. With the growing complexities of the software, the number of potential bugs is also increasing rapidly. These bugs hinder the rapid software development cycle Bugs, if left unresolved, might cause problems in the long run. Also, without any prior knowledge about the location and the number of bugs, managers may not be able to allocate resources in an efficient way. In order to overcome this problem, researchers have devised numerous bug prediction approaches so far.

RELATED WORK:

The following is the similar work identified in the field of bug prediction using machine learning algorithms. In a work done by G. Eason et. al [1] it has been found that, focused developers makes less error in software components. Less focused developers always make more errors according to the industry standards. They have constructed bug predictionmodel using three techniques for data set obtained from 26 projects. The important

Face Recognition using 2D-Discrete Wavelet Transform & Vertical Segmentation Method

Two Dimensional Discrete Wavelet Transform, Overlapping Local Binary Pattern & Vertical Segmentation Method

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ABSTRACT

Biometrics recognizes a human being based on a physiological or behavioral characteristic. A physiological characteristic is a stable physical characteristic such as a fingerprint pattern, face recognition, hand geometry pattern or iris pattern. These characteristics are unchangeable and unalterable. A Behavioral Characteristic includes signature,how person types at a keyboard and how a person speaks. The degree of variation in a physiological characteristic is smaller than a behavioral characteristic. Face Recognition is capable of identifying a face from a digital image or video. Face Recognition is the powerful biometric. Face recognition system compares selected features of the inputimage with faces in the database.

Keywords: Face Recognition, 2d-DWT,OLBP,VSM

INTRODUCTION:

Feature extraction is one of the most important part for face recognition. The facial feature description method is broadly classified into two schemes: Holistic scheme and Local scheme. In the holistic scheme, features are obtained entirely from the facial image. In the local scheme, features are obtained from parts of face and recognized as a combined feature. Faces can be taken by the user or they can be captured by surveillance cameras. There is a great need for safety and security based applications like forensic science.
In this paper, 2-d dimensional Discrete wavelet transform, overlapping local binary pattern and vertical segmentation method have been proposed for face recognition. Section II states a related work of the algorithm. Section III explains DWT, OLBP & VSM.Section IV gives the proposed algorithm. Section V gives result analysis for different database. Finally, sectionVI conclusion of this paper.

Related Work:

A 3D face acquisition involves a mobile sensor based on fringe projection. The aim of this work is to implement a mobile depth and color acquisition system on a smart phone, offers good accuracy and short capture time for acquiring face data was proposed by Marco Piccalilli et.al [1]. Dominik Jelsovka et al. [2] presented Canonical Analysis approach based on detected facial curves from 3d mesh surface. He implemented modified 2d-3d face recognition approach using facial curves from 3d mesh surface. This algorithm decreases computation complexity compared to the conventional 3d face recognition. Cheng Zhong et al.[3] proposed the quad tree clustering algorithm to for facial codes. He proposed a 3-d textons to represent and recognize different textures.
In this proposed recognition model, features are extracted from the trained and test images of Yale database with 15 different poses for each image. In the pre-processing step, color image is converted to gray image and resized.The proposed face recognition system includes two phases namely the training phase and testing phase. In the training phase, feature extraction is performed using OLBP. The recognition of features is done using Euclidean distance.

Data Deduplication with Dynamic Management in Cloud Storage

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ABSTRACT

In cloud storage services, deduplication technology is commonly used to reduce the space and bandwidth requirements of services by eliminating redundant data and storing only a single copy of them. Deduplication is most effective when multiple users outsource the same data to the cloud storage, but it raises issues relating to security and ownership. Proof-of-ownership schemes allow any owner of the same data to prove to the cloud storage server that he owns the data in a robust way. However, many users are likely to encrypt their data before outsourcing them to the cloud storage to preserve privacy, but this hampers deduplication because of the randomization property of encryption. Recently, several deduplication schemes have been proposed to solve this problem by allowing each owner to share the same encryption key for the same data. However, most of the schemes suffer from security flaws, since they do not consider the dynamic changes in the ownership of outsourced data that occur frequently in a practical cloud storage service. In this paper, we propose a novel server-side deduplication scheme for encrypted data. It allows the cloud server to control access to outsourced data even when the ownership changes dynamically by exploiting randomized convergent encryption and secure ownership group key distribution.

Keywords: Deduplication, Proof-of-ownership, Encryption

INTRODUCTION:

Cloud computing provides scalable, low-cost, and location-independent online services ranging from simple backup services to cloud storage infrastructures. The fast growth of data volumes stored in the cloud storage has led to an increased demand for techniques for saving disk space and network bandwidth. To reduce resource consumption, many cloud storage services, such as Dropbox, Wuala, Mozy, and Google Drive, employ a deduplication technique, where the cloud server stores only a single copy of redundant data and provides links to the copy instead of storing other actual copies of that data, regardless of how many clients ask to store the data. The savings are significant, and reportedly, business applications can achieve disk and bandwidth savings of more than 90%. However, from a security perspective, the shared usage of users 'data raises a new challenge. As customers are concerned about their private data, they may encrypt their data before outsourcing in order to protect data privacy from unauthorized outside adversaries, as well as from the cloud service provider. This is justified by current security trends and numerous industry regulations such as PCIDSS. However, conventional encryption makes deduplication impossible for the following reason. Deduplication techniques take advantage of data similarity to identify the same data and reduce the storage space. In contrast, encryption algorithms randomize the encrypted files in order to make cipher text indistinguishable from theoretically random data. Encryptions of the same data by different users with different encryption keys results in different cipher texts, which make it difficult for the cloud server to determine whether the plain data are the same and deduplicate them. The majority of cloud computing infrastructure currently consists of reliable services delivered through data-centers that are built on computer and storage virtualization technologies. The services are accessible anywhere in the world, with The Cloud appearing as a single point of access for all the computing needs of

Solar with IOT Enabled Charging Stations for Electrical Vehicle

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ABSTRACT

The main idea of this paper is to reduce greenhouse gas emission and fossil fuel. This paper is about charging E-vehicle module using the Solar panel, availability of maximum power is viewed by IOT(internet of things) device and the maximum power generated by the solar is being tracked using the MPPT(maximum power point tracking) controller. The whole setup is connected to the Arduino uno, the battery level generated and distributed amount of the battery is viewed using an LCD (liquid crystal display). This set up can charge multiple vehicles using solar cell. GSM (global system for mobile) modem is used to get an alert message for any reduction and access of power occurred in the system. A web page is used to check the availability status of charge, keep track the power transferred to the charging module and also displays the available location of the charging station.

Keywords: Arduino UNO R3, Solar panel, MPPT controller, DC-DC converter, Modem, Servo motor, Battery, GSM, LDR sensors.

INTRODUCTION:

As the demand for conventional energy like coal, natural gas, and oil is raised, so that the researchers forced towards the development of renewable resources or non-conventional energy resources. In the last couple of years, there has been a lot of discussion around the prices of fuel apart from the deregulation of petrol and fossil fuel prices. Moreover, these threats of disruption of supplies have brought the focus on to alternate drive train technologies. In further years there will be more solar electric vehicle will be introduced due to these reasons: (1)Reduction of emission of fossil fuel for extracting power from renewable resources. (2) Intelligent compliance to electronic requirements that facilitate the monitoring the availability of used power using IOT. (3) Tracking of sun's radiation throughout a time. Electric vehicle confines the outlook of passenger a vehicle that draws current from the rechargeable battery. There are three types of electric vehicle: hybrid electric vehicle (HEV), plug-in hybrid (PHEV), battery electric vehicle (BEV) and extended range electric vehicle(EREV). The main objective of the paper is to provide power from solar PV cell to the charging station in which the vehicle can be charged through the rechargeable battery and also with the help of IOT, the charging station can be monitored frequently at any moment and stored in the cloud in a graph pattern (think speak).

LITERATURE SURVEY:

Paper: 1
Title: Optimization of Solar Energy System for the Electric Vehicle **Year:** 2018
Abstract: The incorporation of renewable energy and the transportation system can be significantly beneficial for the economy and environment of Bangladesh. The main energy source for vehicles in Bangladesh is the country's natural gas and fuel. However, due to the rapid depletion of the gas reserve, soaring gas prices and global warming, alongside the environmental pollution caused by burning fuel, this raises concerns about these energy sources. Renewable energy offers a plausible solution to these problems.
Conclusion: Has been proposed a complete new use for the existing installed solar PV panels at the selected location, which will optimize the uses of the installed system.

Effect of Chemical Admixtures on the Performance of Strength of Cement Mortar Cubes

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ABSTRACT

To increase the strength and stability of concrete, chemicals and admixtures play a important role in modifying the desired properties in any design mix. The development of these admixtures in their performance contributed a lot to the modern concrete over the conventional concrete. In the present study, effect of admixtures is considered to evaluate their performance on strength with their respective optimum dosages. Cement mortar cubes tested for 3 days, 7 days and28 days with standard water–cement ratio determined from the standard consistency test of cement paste following IS procedures reveal notable improvements in the strength. This study highlights the minimum water–cement ratio required in each category of the admixture, and its effect on strength is discussed.

Keywords: Admixture, Strength, Performance

INTRODUCTION:

Admixtures are the widely used additives in modern concrete to produce high performance concrete. The addition of these admixtures in the conventional concrete modifies the desired properties in fresh or green stage of concrete. The availability of admixtures can be categorized into many types; however, water reducers, accelerators and retarders have a wide range of applications in the construction field. The combination of more than one admixture in required dosages shall yield a high-performance concrete. Hence, laboratory experiments are carried out before the application of these admixtures in the field to determine the behaviour on properties of concrete in green state. The present study includes experimental tests to observe the behaviour of performance of low, medium and high end admixtures on the strength, Auramix 201, Auramix 300 plus, Auramix 402 and Auramix450 are six different admixtures having different chemical compositions used in this study. The Auramix series chemical admixtures are second-generation admixtures based on polycarboxylic ethers. Compressive strength being the most important property of concrete makes it necessary to determine the effect of modern admixtures on strength. Studies have shown that factors affecting strength include quality of materials and the water–cement ratio. Hence, admixtures are added to produce workable mix keeping water–cement ratio as low as possible in order to achieve high-performance concrete. Generally, test cubes of standard sizes are tested to determine the compressive strength. The present study aims at determining the strength of cement mortar cubes with the addition of optimum dosage of admixtures. The study reveals clear differentiation of strength for 3 days, 7 days and 28 days of cement mortar with the use of different admixtures enlisted above. Studies were carried out under controlled environment as per relevant IS codes.

Implementation of Chat-Bot System using Machine Learning and Natural Language Processing

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ABSTRACT

A chat-bot is a computer program that can converse with humans using artificial intelligence in messaging platforms. The goal of the project is to add a chat-bot feature and API for Yioop. discussion groups, blogs, wikis etc. Yioop provides the great help in web search portal. It has its own account management system with the ability to set up groups that have discussions boards. Groups are combined users that have permission to a group feed. The user who creates a group is the owner or Admin of the group. Posts are grouped by thread in a group containing the most recent activity at the top. The chat-bot API for Yioop will allow developers to create new chat-bots, powered by rules or artificial intelligence, that can interact like a human with users in a groups feed page. Example chat-bots that can be developed with this API is weather chat-bots or book flight chat-bots. Over past few years, messaging applications have become more popular than Social networking sites. People are using messaging applications these days such as Facebook Messenger, Skype, Viber, Telegram, Slack etc. This is making other businesses available on messaging platforms leads to proactive interaction with users about their products. To interact on such messaging platforms with many users, the businesses can write a computer program that can converse like a human which is called a chat-bot.

Keywords: Yioop, messaging, Conversation, Artificial Intelligence.

INTRODUCTION:

Machine learning chat-bots works using artificial intelligence. User need not to be more specific while talking with a bot because it can understand the natural language, not only commands. This kind of bots get continuously better or smarter as it learns from past conversations it had with people. Here are simple examples which illustrate how they work. The following is a conversation between a human and a chat-bot: Human: "I need a flight from San Jose to New York." Bot: "Sure! When would you like to travel?" Human: "From Dec 20, 2016 to Jan 28, 2017." Bot: "Great! Looking for flights."

In order to achieve the ultimate goal, we have taken an iterative approach and divided my work into four major deliverables. These deliverables not only helped us in understanding the code structure of Yioop but also enhances Yioop's functionality. In the rest of the report, we will be discussing about the four deliverables. To understand more on chat-bot service, we had implemented a Facebook Messenger Weather Bot in deliverable 1, which is discussed in next section. The purpose of deliverable 2 is to introduce chat-bots to the Yioop. We have added a Bot Configuration setting which is used to add bot users in Yioop. In the next deliverable, we have added functionality where the user willbe able to call bots in a group thread. Activation of bots will happen by calling respective call back URL which is already configured that helps bots to have a conversation with users.

RELATED WORK:

A survey done on[1] the atmosphere of the music describes the intrinsic emotional meaning of a musical clip. It is useful for musical understanding, musical research and some music-related applications. In this paper, we present a hierarchical structure to automate the task of detecting mood based on acoustic musical data, following some psychological theories of music in Western cultures. Three sets of characteristics, intensity, timbre and

Experimental and Feasibility Studies of Recycled Bricks using C & D Waste

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ABSTRACT

Traditional fired clay bricks are widely used as a fundamental building material in most countries. The use of burnt bricks has negative effects such as cutting of trees for burning fuel and degradation of soil near rivers where clay is available for manufacturing of bricks. The other problem is that of improper disposing of C & D waste which results in environmental degradation. With growing awareness of sustainable development it is important to incorporate this waste in the production of building materials and reduce burden on the virgin materials. In this view an experimental investigation is carried to utilize these C & D waste as raw materials for brick making. The materials includes: brick powder, recycled fine aggregate, natural fine aggregate along with cement as a stabilizer. The principles of stabilized earth blocks are employed to attain proper binding rather than burning the bricks. Three different mix compositions are used in this study with Brick powder is a predominant constituent which is about 70%. To assess the properties of the bricks a representative cube samples of size 70.6mm X 70.6mm X 70.6mm are first prepared, and then bricks of size 222mm X 106mm X 73mm is casted for three different mixes. The bricks were cured and tested for compressive strength and water absorption. Based on the results, it has been concluded that C& D waste be can used as a substitute materials for brick making.

Keywords: Construction and demolition Waste (C & D Waste), Re-use & Recycling of C & D

INTRODUCTION:

The construction industry has the largest impact on nature and environment. Previously, the concern on environment formed a small part of construction development. However, with the growing awareness on environmental protection due to the depletion of non-renewable resources, global warming and extremity of destruction to ecology and biodiversity impact, this issue is gaining wider attention by the construction practitioners.

Sustainable construction is a widely used concept now. It was introduced due to the growing concern about future of the planet, and it applies specifically for construction industry as, this being a huge consumer of natural resource. Sustainable construction is thus an aspect of sustainable development, defined as "Development that meets the needs of the present without compromising the ability of future generations to meet their own needs". Thus sustainable construction should make efficient use of resources while minimizing any adverse impacts on the environment.

The estimated waste generation during construction is 40 kg per m^2 to 60 kg per m^2. The highest contribution to waste generation comes from the demolition of buildings which on average generates between 300 kg per m^2 to 500 kg per m^2 of waste. In India, around 12 million to 14.7 million tonnes of construction and demolition waste are produced every year, seven to eight million tonnes are concrete and brick waste.

The disposal of these huge amounts of waste material places strain on landfill sites. On the other hand, the construction industry uses vast amounts of natural resources all around the world. Both these practices are damaging the environment and are no longer considered sustainable. *An obvious solution lies in the Re-use & Recycling of C & D waste.*

Concrete recycling has been identified throughout the world as part of the strategy on responsible management

Generation of Control Signals for A Transmitter in Troop Level Radar of Akash Missile System

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ABSTRACT

In the pulsed radar transmitter system the amount of the Radio Frequency (RF) signal to be transmitted by the Travelling wave tube (TWT) plays an important in order to track the enemy targets. Therefore the pulse generated has to be fed to the control grid of TWT which in turn determines the power required for the transmission.Here, we are generating and controlling the 32 combination of pulses which enables to gets the information of targets distance using 8051 Microcontroller with LCD and keypad interface. Transmitter control signals (Grid pulses) generation to perform stand-alone test of transmitterused in TLR (Troop level radar) of Akash Missile System. Akash Missile System is a part of Indian Defence and TLR is tracking radar of this system, TWT (Travelling Wave Tube) based transmitter is used in TLR. This interface is used in our project so as to make it cost effective and to control the required signals manually. The pulses thus generated are fed to the Differential Line Driver (DLD) circuit as the radar consists of differential receiver. DLD helps to carry the RF signal in a parallel line Transmission line with no noise addition.

INTRODUCTION:

As TLR is main radar of AKASH MISSILE SYSTEM. To perform testing of transmitter (TWT) of TLR, number of control pulses required from PSPU (Programmable signal processing unit) but it is difficult to cascade PSPU all time with transmitter. So an operating tool or a device (JIG) is needed to stimulate all control pulses.
This JIG should work in two modes: Local mode and Remote mode. These two modes works using mainly four hardware's and three software's. Here the program is fused directly to the microcontroller 8051 with the help of PC (personal computer). With the help of keypad and LCD we can assign the control pulses dimensions. Then the output of the microcontroller is then fed to differential line driver PCB to strengthen the output signal of 8051 for the communication purpose of transmitter.

METHODOLOGY:

The LCD and keypad are used as an input and output devices for the microcontroller 8051 as shown in block diagram in Local mode (figure.1). By using pulse width and pulse repetition time specifications are loaded into the PSU.This JIG should work in two modes: Local mode and Remote mode. These two modes works using mainly four hardware's and three software's.

Hardwares:

- Microcontroller board
- Differential line driver PCB
- LCD
- Keypad

Review of Mental Health Applications using Data Science with ML Techniques

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ABSTRACT

According to the World Health Organization (WHO), amongst 1.3 billion of the country's population, about 90 million Indians i.e., 7.5 % of them endure one or the other kind of mental disorder. The WHO also predicted that, the population suffering from mental illness would be around 20% by 2020 without foreseeing the corona virus pandemic. That counts over 200 million Indians who may be affected mentally and the number would even more raise and worsen the instances caused due to the other effects of the pandemic such as the caged feeling due to lockdown, loneliness, financial distress, etc. This paper aims at considering few Machine Learning algorithms such as Random Forest, SVM, K-NN, ID3, Naïve Bayes and C4.5 and find the best suitable algorithm for detecting and predicting mental illness accurately. Also, a few SDLC frameworks are considered to provide the integrated results of the algorithms in Mental Health. This survey of algorithms mainly focuses on classifying the emotional states and detecting mental illness in more accurate form. As a result of which, C4.5 algorithm was found to be more accurate.

Keywords: Random Forest, SVM, K-NN, ID3, Naïve Bayes, C4.5, LDTM, Data Analytical Framework.

INTRODUCTION:

Mental Health can be coined as the well-being state of an individual in terms of emotions and the other psychological parameters. The abnormal variations in a state of an individual in regard to thoughts, emotions and social functioning leads to mental illness. According to the World Health Organization (WHO), amongst 1.3 billion of the country's population, about 90 million Indians i.e., 7.5 % of them endure one or the other kind of mental disorder. The WHO alsopredicted that, the population suffering from mental illness would be around 20% by 2020 without foreseeing the corona virus pandemic. That counts over 200 million Indians who may be affected mentally and the number wouldeven more raise and worsen the instances caused due to the other effects of the pandemic such as the caged feeling due to lockdown, loneliness, financial distress, etc. The top 5 most common mental illnesses are the depression, anxiety, bipolar affective disorder, Schizophrenia and other Psychoses, Dementia. The traditional and modern ways are the broader sectors of medicinal practices in India. The traditional practices are inclusive of the various categories ofhealers such as the Ayurveda practitioners, folk healers, spiritual healers and Allopathic healers. The modern methods of curing involve the usage of Psychotropic drugs that are preferred by most of the psychiatrists and also theelectroconvulsive therapy (ECT) or other psycho therapies. Since the modern psychiatric facilities in India, areavailable only in the urban areas, there is a paucity of the modern amenities for the people in the rural areas. This is the main reason why 80% of the population depends on the traditional methods such as Ayurvedic and Unani systems of medicine, religious practices such as the prayers, fasting, magical rituals that are considered to be indigenous in nature.

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

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

An Effective and Fine Grained Big Data access Control Scheme with Protection Policy

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ABSTRACT

In order to control the access of the huge amount of big data becomes a very challenging issue, especially when big-data are stored in the cloud. Cipher text- policy attribute-based encryption (CP-ABE) is a promising encryption technique that enables end-users to encrypt their data under the access policies defined over some attributes of data consumers and only allows data consumers whose attributes satisfy the access policies to decrypt the data. In CP-ABE, the access policy is attached to the cipher text in plaintext form, which may also leak some private information about end-users. Existing methods only partially hide the attribute values in the access policies, while the attribute names are still unprotected. In this paper, we propose an efficient and fine-grained big data access control scheme with privacy-preserving policy. Specifically, we hide the whole attribute (rather than only its values) in the access policies. To assist data decryption, we also design a novel attribute bloom filter to evaluate whether an attribute is in the access policy and locate the exact position in the access policy, if it is in the access policy. Security analysis and performance evaluation show that our scheme can preserve the privacy from any linear secret-sharing schemes access policy without employing much over head.

Keywords: CP-ABE, Big data, Decryption, Secret-sharing.

INTRODUCTION:

In the era of big data, a huge amount of data can be generated quickly from various sources (e.g., smart phones, sensors, machines, social networks, etc.). Toward these big data, conventional computer systems are not competent to store and process these data. Due to the flexible and elastic computing resources, cloud computing is a natural fit for storing for execution of processing pipelines among heterogeneous event processing engines as a workflow. In traditional workflow, tasks are executed once or several times at some control flows like iterations. In contrast to it, streaming workflows that are constantly responding to environmental conditions based on stream inputs allow tasks in the workflow to be invoked multiple times in , which involves movement of huge amount of data between execution unquestionable trust in the cloud provider, in some cases corroborated by reports of external auditors. While providers may offer security enhancements such as protection of data at rest, end-users have limited or no control over such mechanisms. There is a clear need for usable and cost-effective cloud platform security mechanisms suitable for organizations that rely on cloud infrastructure. One such mechanism is platform integrity verification for compute hosts that support the virtualized cloud infrastructure. Several large cloud vendors have signaled practical implementations of this mechanism, primarily to protect the cloud infrastructure from insider threats and advanced persistent threats. We see two major improvement vectors regarding these implementations. First, details of such proprietary solutions are not disclosed and can thus not be implemented and improved by other cloud platforms. Second, to the best of our knowledge, none of the solutions provides cloud tenants a proof regarding the integrity and processing big data. With cloud computing, end-users

A Study on Usage of Potential Bagasse Ash as a Substitute Material for Cement Concrete

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INTRODUCTION:

The use of industrial and agricultural waste by industrial processes has been the focus of waste reduction research for economic, environmental, and technical reasons. Sugar-cane bagasse is a fibrous waste-product of the sugar refining industry, along with ethanol vapor. This waste product (Sugar-cane Bagasse ash) is already causing, environmental pollution. Bagasse ash mainly contains aluminum ion and silica. In this project, Bagasse ash has been chemically and physically characterized, and partially replaced in the ratio of 0%, 5%, 15%, 20% and 25% by weight of sand in concrete.

OBJECTIVE OF STUDY:

The objectives of project are to make a synergic effect of Sugar cane bagasse ash (SCBA) incorporated in concrete in order to study the feasibility of using Bagasse Ash to partial replace of sand in concrete and usage of waste product for better performance.

1. To study and evaluate the physical and chemical properties of Cement, Aggregates and bagasse ash.
2. To study the effect of partial replacement of fine aggregate by bagasse ash on workability of concrete.
3. To study the mechanical properties of hardened concrete.

LITERATURE REVIEW:

Asokan Pappua et al., tests were carried out inclusion of industrial waste-based newer building materials, emphasizing their environmental significance in the curriculum at higher education level and practical applications of wastes in construction sector will give fill to such technology promotion. The new and alternative building construction materials developed using agro-industrial wastes have ample scope for introducing new building components that will reduce to an extent the costs of building materials

The study was carried out by Ganesan et al., The utilization of waste materials in concrete manufacture provides a satisfactory solution to some of the environmental concerns and problems associated with waste management. Agro wastes such as rice husk ash, wheat straw ash, hazel nutshell and sugarcane bagasse ash are used as pozzolanic materials for the development of blended cements.

According to Ajay Goyal and Hattori Kunio,2009 the ever increasing demand and consumption of cement and in the backdrop of waste management, scientists and researchers all over the world are always in quest for developing alternate binders that are environment friendly and contribute towards sustainable management. It is, however, generally used as a fuel to fire furnaces in the same sugar mill that yields about 8-10% ashes containing high amounts of un-burnt matter, silicon, aluminum, iron and calcium oxides

Osinubi and Stephen, 2015 evaluated Bagasse ash is the residue obtained from the incineration of bagasse in sugar producing factories. Research works have been carried out on the improvement of geotechnical characteristics of soils using bagasse ash.

According to Srinivasan and Sathiya 2010, the utilization of industrial and agricultural waste produced by industrial processes has been the focus of waste reduction research for economic, environmental, and technical reasons. Sugar-cane bagasse is a fibrous waste-product of the sugar refining industry, along with ethanol vapor.

Automatic Railway gate controller with high-speed alerting system using PLC

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ABSTRACT

The present work attempts to automate the opening and closing of gates at a railway level crossing. In general, level crossing gates are operated manually by a gate keeper. The gate keeper receives the information about the train arrival from a near station. When the train starts to leave the station, the station in-charge delivers this information to the closest gatekeeper to get ready. This human intervention can be avoided by automating the process. In situations where the train is late due to some reason, the gates remain closed for long durations causing dense traffic jam near the gates. This too can be prevented by automation. The proposed system uses infrared sensors to detect the arrival and departure of trains at the railway level crossing and PLC (Programmable logic controller) to control the opening/closing of gates. The system uses two IR sensors to detect the arrival of the train and a third IR sensor to detect the departure of the train. When the arrival of the train is sensed, signals are provided to the traffic indicating the arrival of the train on the track. When the second sensor detects the train then the signal turns red and the motor operates to close the gate. The gate remains closed until the train completely moves away from the level cross. When the departure of the train is detected by the third sensor, the traffic signal turns green and the motor operates to open the gate. Thus automation of the gate operations at the railway level cross is achieved using sensors.

Keywords: PLC, Obstacle detection, Railway gate, IR Sensor.

INTRODUCTION:

Railway transport is one of transition mode, which has an important role in moving passengers and freights. However, railroad-related accidents are more dangerous than other transportation accidents. Therefore more efforts are necessary for improving its safety. This system is to manage the control system of railway gate using the PLC. The main purpose of this system is about railway gate control system and level crossing between railroad and highway for decreasing railroad-related accident and increasing safety. In addition, it also provides safety road users by reducing the accidents that usually occur due to carelessness of road users and errors made by the gatekeepers. Railways preferred the cheapest mode of transportation over all the other means.

This system is designed using Programmable Logic Controllers (PLC) to avoid railway accidents happening at railway gates where the level crossings. PLC performs the complete operation i.e., sensing, gate closing and opening. As a train approaches the railway crossing from either side, the sensors placed at a certain distance from the gate detects the approaching train and controls the operation of the gate. This system was operated after signal received from the sensors. This signal is used to trigger the PLC for operating the gate motor, alarm system and light indicators.

Present project is designed using microcontroller to avoid railway accidents happening at unattended railway gates, but due to the limitation in microcontroller we are moving on to PLC.

RELATED WORKS:

Previous related work are [1], [2], [3] and [4]. Xishi [2] discussed about the advanced train safety system. They defined that in the process of developing ATSS, a fault tolerance method is applied for both the hardware and the

An IOT Based Smart Glove Gesture Vocalizer for Deaf and Mute People

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ABSTRACT

Human beings have a ability to see, listen and interact with their external environment. Unfortunately, there are some people who are differently abled and do not have the ability to use their senses to the best extent possible. These people depend on other means of communication like sign language. This presents the major roadblock for people in deaf and dumb communities when they try to engage in interaction with others, especially in their educational, social and professional environment. Therefore, it is necessary to have an advance gesture recognition or sign language recognition system to bridge this communication gap. Here an effort has been made to develop a smart glove using flex sensor for real time gesture recognition. The objective is to create a device which helps the hearing or speech impaired person to communicate with others.

Keywords: Sign language recognition system, smart glove, flex sensor.

INTRODUCTION:

The project came into existence for one sole purpose, to help the deaf and mute community to easily communicate and interact with their nearby surrounding. It mainly focus on converting basic symbols that represent the 26 English alphabet as mentioned under American Sign Language (ASL) script and display them on a smartphone screen. The idea of this project is inspired by controlling robotic arm with the help of hand movements. Accelerometer is used to measure the tilt in the palm. Five flex sensors are placed on a glove, four for the fingers and one for the thumb. These sensors measure the bending angle in the fingers and thumb. According to these bend angle value the Arduino Nano microcontroller understands which set of value represent which symbol and transfer the appropriate result to the Android app in smartphone via Bluetooth which displays the generated symbol and give audio for the same Representing the some symbols was quite easy and fun, but there were few symbols that were difficult to distinguish such as “U” and “V” which are slightly different form each other and gave almost same value. The earlier prototype failed radically to represent the same but this problem was solved by using a metallic strip between the fingers, which was used to tell if they are in contact or not. The accuracy was increased by continuously updating the data set for each and every symbol from time to time.

RELATED WORK:

In[1] the author has observed the disabilities in human beings and as a result he concluded that the human beings have natural ability to see,listen and interact with their surroundings. Unfortunately, there are some who do not have the ability to use their sense .Hence, this paper talks about creating a device using Intel Galileo Gen 2 IoT kit for real time gesture recognition. In[2] the aim of this paper was to design an interface for controlled environment with help of computer vision based technique which is depend on the way human being perceive information about their surroundings. In[3] this paper an automatic sign language recognition system has been developed using Random Forest classifier with machine learning algorithm to translate the sign alphabet and common word into text sound. The main purpose of this paper is to provide ease of sharing basic idea with minimum communication gap and easier collaboration for hard hearing people. In[4] this paper a sign language

Integrating of Rivers in India: Boost to Economy or Environmental Disaster

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ABSTRACT

The interlinking of river project is a Civil Engineering project, which aims to connect Indian rivers through reservoirs and canals. The farmers will not have to depend on the monsoon for cultivation and also the excess or lack of water can be overcome during flood or drought. The purpose of interlinking the rivers is to join the Indian rivers through reservoirs and canals. This will solve the problems of flood and will provide water throughout the year. Farmers will also get benefit as they will not be dependent on monsoon for water etc. This article is based on the river linking project, in which its history and the benefits of this project are covered. The Supreme Court of India, in 2002 directed the central government to link major Indian rivers within 10 years. In December 2002, the government appointed a task force on interlinking of 37 rivers and the dead line was extended by 2016. The RIL project not only raises national issue but also give way to international conflict in South Asia over sharing of river waters. The paper examines the impact of the RIL project on the paradigms and working of Indian federalism. It is based on triangulation of theory and qualitative method that applies content analysis of primary and secondary sources to draw conclusion. It finds that in the Indian Constitution water is in the State List while inter-state river is in the Union List and taking up such a mega RIL project without the consent of the concerned states is unacceptable. It considers the directive of the Supreme Court indeed, as an act of judicial activism.

INTRODUCTION:

The interlinking of river project is a Civil Engineering project, which aims to connect Indian rivers through reservoirs and canals. The farmers will not have to depend on the monsoon for cultivation and also the excess or lack of water can be overcome during flood or drought. You will be surprised to know that India has approx four percent of the water available, and India's population is around 16 percent of the world's population. But every year, hundreds of millions of cubic cusec water flows into the ocean and India has to meet its needs with only 4 percent of the water. Every project has two aspects, but we should focus on how much more people will get benefit from this project. This article is based on the interlinking of the river project, in which its history and the benefits of this project are explained.

What is the interlinking River project?

This project will connect 60 rivers of India, including river Ganga. Hopefully, with the help of this project, there

An Employment Discussion Conversation Structure with Independent Machine ERICA

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ABSTRACT

We show a new employee screening discourse with the independent android ERICA which assumes the part of a questioner. Ordinary prospective employee meeting discourse frameworks pose just precharacterized inquiries. The prospective employee meeting arrangement of ERICA generates follow up questions dependent on the interviewee's reaction on the fly. The subsequent inquiries comprise of two sorts of approaches: determination based and catchphrase based. The primary kind inquiry depends on choice from a pre-characterized question set, which can be utilized by and large. The second kind of inquiry depends on a catchphrase removed from the interviewee's reaction, which delves into the interviewee's reaction powerfully. These subsequent inquiries add to acknowledging regular and prepared discourse.

INTRODUCTION:

Spoken dialogue systems have been developed for various scenarios so far such as smartphone apps and smart speakers, and future systems are expected to handle more social interaction like human-human dialogues in our daily lives. For example, in a real-life job interview, interviewers make various kinds of questions directly to interviewees in order to elicit information necessary for determining acceptance. A spoken dialogue system is expected to play the role of an interviewer so that interviewees are able to practice answering against expected questions. To assist with interview practice, the system has to realize a job interview dialogue similar to real human-human dialogue.

We demonstrate a job interview dialogue with autonomous android ERICA [3, 4] in the role of an interviewer. ERICA looks like a human being and is able to generate various behaviors including non-verbal ones such as eye gaze and head nodding.

Current spoken dialogue systems for job interview dialogue ask only pre-defined questions [2, 7, 1, 6]. Although it is important for interviewers to dynamically ask follow-up questions to know more about the current topic, only a small number of studies have been conducted on automatic generation of follow-up questions [8]. In this demonstration, ERICA generates follow-up questions based on how well the in- terviewee's response fulfills the previous question and also keywords extracted from that response. It is expected that these follow-up questions make the job interview dialogue more natural and stimulate some thought from the interviewee, which is required for a practical system for job interview training.

System configuration:

While the basic dialogue flow is controlled with finite state transition, questions are generated based on interviewees' responses as explained below.

Scenario:

In this demonstration, ERICA plays the role of the interviewer in a job interview. The dialogue content is independent of any business category or company, so questions from ERICA focus on the motivation and

An efficient way of solving Bigdata using Hadoop & Map Reduce

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ABSTRACT

Big Data is a collection of data that is huge in volume, yet growing exponentially with time. It is a data with so large size and complexity that none of traditional data management tools can store it or process it efficiently. Big data is also a data but with huge size.Big data is dataset that having the ability to capture, manage & process the data in elapsed time .Managing the data is the big issue. And now days the huge amount of data is produced in the origination so the big data concept is in picture. It is data set that can manage and process the data. For managing the data the big data there are many technique are used .One of this technique is Hadoop. Hadoop can handle the huge amount of data, it is very cost effective, and it can handle huge amount of data so processing speed is very fast, and also it can create a duplicate copy of data in case of system failure or to prevent the loss of data.This paper gives the Introduction of big data and Hadoop, characteristics of big data ,problem associated with big data, architecture of big data and Hadoop, other component of hadoop like pig,hive,HBase and the advantages, disadvantages and applications of Hadoop and also the conclusion.

Keywords: Bigdata, Hadoop, Mapreduce, Hive, pig, HBASE

INTRODUCTION:

Big data definition: Big data is dataset that having the ability to capture, manage& process the data in elapsed time. Big data includes the unstructured data, semi structured data, & structured data but it mainly focus on unstructured data. Big data size is vary from 30-50 terabytes(10 12 or 1000 gigabytes per terabyte) to multiple petabytes (1015 or 1000 terabytes per petabyte).

Characteristics of big data: Big data is having mainly 3 V's of characteristics.
1) Volume: The volume contains the amount of data generated in the enterprise.The size ofdata defines the whether the data is considered as the big data.
2) Variety: The variety of data defines the type of data, source of data & nature of data. This helps the people who analyze the data in to structured, unstructured & semi structured data.
3) Velocity: Velocity of data means the speed at which data is generated and processed to the demand.in other words its means the speed of data.
Problem associated with big data processing:
1) Information growth:
In big data it's the most important issue that is size. Of course we heard the word big data the first thing we are having in our mind is size. Managing large and rapidly increasing amount of data is the challenging task. Volume of data is increasing faster and the CPU speed is static.
2) Speed:
Size matters the speed. If there is the larger the dataset having the large information the then it will take more time to response.
3) Privacy and Security:
Privacy of data is the huge issue arises in big data. In US there is great fear regarding the inappropriate use of the personal data.

LEACH Protocol for Gathering The Data in Wireless Network by using EE-LEACH Protocol

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ABSTRACT

A wireless sensor network (WSN) consists of a huge number of sensor nodes that are inadequate in energy, storage and processing power. One of the major tasks of the sensor nodes is the collection of data and forwarding the gathered data to the base station (BS). Hence, the network lifetime becomes the major criteria for effective design of the data gathering schemes in WSN. In this paper, an energy-efficient LEACH (EE-LEACH) Protocol for data gathering is introduced. It offers an energy-efficient routing in WSN based on the effective data ensemble and optimal clustering. In this system, a cluster head is elected for each clusters to minimize the energy dissipation of the sensor nodes and to optimize the resource utilization. The energy-efficient routing can be obtained by nodes which have the maximum residual energy. Hence, the highest residual energy nodes are selected to forward the data to BS. It helps to provide better packet delivery ratio with lesser energy utilization. The experimental results shows that the proposed EE-LEACH yields better performance than the existing energy-balanced routing protocol (EBRP) and LEACH Protocol in terms of better packet delivery ratio, lesser end-to-end delay and energy consumption. It is obviously proves that the proposed EE-LEACH can improve the network lifetime.

Keywords: Clustering; Cluster head; Energy-efficient routing; Low energy adaptive clustering hierarchy (LEACH);Wireless sensor networks

INTRODUCTION:

A wireless sensor network (WSN) consists of a large number of small-sensor nodes used to monitor areas, collect and report data to the base station (BS). Due to the accomplishment in low-power digital circuit and wireless transmission, most of the applications of WSN are implemented and used in military applications, object tracking, habitat monitoring. A typical WSN is com- posed of a huge number of sensor nodes, which are randomly disseminated over the network. The signals are picked by all types of sensors and the data acquiring unit, processing and transmitting them into a node called *sink node*. The sink node requests for the sensor information by forwarding a query throughout the net- work. When the node discovers the data matching the query, the response message is routed back to the sink node. The energy conservation of the network can be minimized by allowing the porting of the nodes called cluster heads. The data gathered from the nodes are aggregated and compressed by the cluster heads. After that, the aggregated data is forwarded to the BS, but it has some problems. The major problem is energy consumption and it is concentrated on the cluster heads. In order to resolve this issue, the cluster routing is used to distribute the energy consumption with the cluster heads. Data gathering is an efficient method for conserving energy in sensor networks. The major purpose of data gathering is to remove the redundant data and save transmission energy . A data-gathering algorithm includes some aggregation methods to minimize the data traffic. It reduces the number of message exchange among the nodes and BS. The performance of data gathering in WSN can be characterized based on the rate at which the sensing information can be gathered and transmitted to the BS (or sink node). In particular, the speculative measure to capture the demerits of

Natural Language Processing by using Text Processing Algorithm

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ABSTRACT

Natural Language Processing, or NLP for short, is broadly defined as the automatic manipulation of natural language, like speech and text, by software. The study of natural language processing has been around for more than 50 years and grew out of the field of linguistics with the rise of computers As it is one of the oldest area of research in machine learning it is used in major fields such as machine translation speech recognition and text processing. Different text and speech processing algorithm are discussed in this review paper and their working is explained with examples. Results of various algorithms show the development done in this field over past decade or so. We have tried to differentiate between various algorithms and also its future scope of research. The Gap analysis between different algorithms is mentioned in the paper as well as the application of these various algorithms is also explained. Natural language processing has not attained perfection till date but continuous improvement done is the field can surely touch the perfection line. Different AI now use natural language processing algorithms to recognize and process the voice command given by user.

Keywords: NLP, LSTM, PBMT, NMT

INTRODUCTION:

Andrew Ng has long predicted that as speech recognition goes from 95% accurate to 99% accurate, it will become a primary way that we interact with computers. The idea is that this 4% accuracy gap is the difference between annoyingly unreliable and incredibly useful. Thanks to Deep Learning, we‟re finally cresting that peak.

Nowadays artificial intelligence is widely discussed buzzword and is in under rapid development. Basically artificial intelligence is a computer program that can do something smart like a human, it is actually machine mimicking human to perform task in his absence and sometimes in better as well as efficient way, broadly speaking.

Machine learning is subset of AI. The intelligence of machine is improved using machine learning as through learning algorithms and analysis of different types of data. Deep learning and neural networks are subset of machine learning. Deep learning algorithms do analysis of different data sets through algorithm again and again and improves the machine knowledge according to the output obtained.

Natural language processing is an integral area of computer science in which machine learning and computational linguistics are broadly used. This field is mainly concerned with making the human and computer interaction easy but efficient. Machine learns the syntax and meaning of human language, process it and gives the output to user. The area of NLP involves making computer systems to perform meaningful tasks with the natural and human understandable language.

The reason why natural language processing is so important in future is it helps us to build models and processes which take chunks of information as input and in form of voice or text or both and manipulate them as per the algorithm inside the computer.

Thus the input can be speech, text or image where output of an NLP system can be processed Speech as well as Written Text.

Different algorithms developed to increase the efficiency of processing the language in text form which we are going to discuss here are:

Usage of Geological Features in Seismic Hazard Evaluation- A Critical Review of Various Methods

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ABSTRACT

Seismic hazard analysis represents an evaluation of the probability that an area will be affected by the potential earthquakes generated at a given distances and during future time intervals. In recent decades, significant investigations are done to find the possibility that a region will be subjected to potential earthquakes, produced within the area or from some distances and also the possibility of future seismicity. This paper presents a comprehensive review of various research works, where geologic tools used for seismic hazard evaluation. An attempt has been made to discuss the usage of numerous morphometric parameters in seismic hazard analysis by identifying the nearby active weaker zones. Finally, some important conclusions and the suggestions for future directions of research in this area are presented. It is felt that this review paper will serve the interests of all the academicians, researchers and engineers involved in the seismic hazard evaluation.

Keywords: Seismic hazard evaluation; Geologic tools; Earthquakes; Weaker zones

INTRODUCTION:

Mapping potentially active faults and gathering information about their capability to produce destructive earthquakes became essential in assessing seismic hazard during the last couple of decades. A precise assessment of these threats mainly depends on its generation and distribution with their recurrence interval in space and time. The prime evidence required for any work related to earthquake hazard estimation, management and mitigation is the identification and understanding of the present condition of the seismic sources (faults /shear zones), and evaluating their role in the historical seismicity of the area. Seismic shaking, the dislocations and distortion along pre-existing structures like faults and shear zones, are having greater influence on the locations, where major infrastructural projects such as nuclear project plants, huge dams and underground crude oil storages (John and Rao, 2014) are located. For many tectonic settings, history of earthquake recording is proved to be alone insufficient to calculate continuing activity of the faults (John, 2018). The highly dynamic periods of damaging earthquakes in many tectonic settings leads to huge damages due to unpredictability. To overcome this challenge, earthquake geologists concentrate on past earthquakes to stretch the seismic catalogue through geology related records (Fig. 1.1). Such a study begins with the identification of signatures of faults in satellite images through geomorphic analysis and to site specific fault identification and evaluation. In many tectonic settings, it was observed that active structures were either hidden or its surface signatures were removed by various agents (John, 2018). Generally active faults show complicated structures with several breaks, varying displacement, style and rupture length. Further, to differentiate between faults, which are recently active and inactive for a long time, is difficult, because the evidences obtained will be far from precise. After identifying the active structure using geomorphological studies, geologist may suggest trenching methods to collect stratigraphic and chronologic data of the region. To identify past seismic events, geologists may use the techniques in various fields of geology like geomorphological studies, structural features, geochronological studies, samples related to sedimentological studies, various soil data etc.

The first step toward quantitative seismic hazard analysis for the area is the recognition and identification of active faults in the region of interest. However, the identification of faults, that are active with low-relief and in highly populated areas become a difficult task due to limited availability of applicable methods especially those areas with less recorded seismicity (Singh et al., 2016). Based on the findings of researchers like John and Rajendran (2008), Cox (1994), and Keller and Pinter (2002) in such areas, the most suitable tool to identify the signature of active tectonism, is analyzing the morphometry of drainage basins Therefore, in the present article an attempt has been made to discuss the usage of morphometric tools in seismic hazard analysis by identifying the nearby active weaker

Solar Powered Automatic Fire Fighting Robot using Image Processing

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ABSTRACT

Image processing based fire detection and extirpation robot which is solar power driven. The agent is primarily based on Image processing (HAAR Cascade algorithm) and is mounted with 4 sensors and 2 motors and both has a capability of detecting the fire prone areas with the help of sensors . It creates a buzzer alert and sprays water or CO2 by pumping it from the tank or cylinder mounted on the chasis of the robot. Robots are the machine developed by humans to guard human live, because the accidents happening during the fire extinguishing process is uncountable. This robot main function is to detect fire and move towards the fire automatically to extinguish it from a safe distance using water. By designing and implementing an autonomous robot capable of detecting and extinguishing flames, disasters can be avoided with minimal risk to human life.

Keywords: Camera, Micro-Controller, Smoke Sensor, Temperature Sensor, Solar Power Driven

INTRODUCTION:

As commonly know in a company or industrial plants are very prone to fires, whose name occurs whether caused by man or machine error in production and even not rarely also caused by short-circuit or shorted power. Typically, these fires occur in an area that is less oversight such as warehouse storage. Originally probably only happen a small spark of fire on the room, but due to the lack of supervision and the slowness anticipation that is done then the sparks that burn the entire contents of the room so that the fire is widespread. Growing Technology, came the tools like camera surveillance. Camera is used to monitor or oversee the rooms there is less supervision, so if there are such incidents spark can be rapidly anticipation before the spark of the fire spread and cause a fire. However, even though it has Camera surveillance with no fixed rarely happen that the name fire. It will be based in the background by the lack supervision off. Even though we've been keeping an eye on a room with Camera but if the officer's supervisors off guard and not immediate do anticipation when the api recorded by Camera and thus are not denied the fire keptcoming.

Because the Camera can only supervise, then to add a function or applied a method on Camera feature named image processing or image processing. So, this image processing is any form of signal processing where the input is an image like a photo or video, while its output can be either a picture or a number of characteristics or parameters related to the image. By combining image processing in camera surveillance, then when the camera surveillance to detect or record the presence of sparks packed image processing or image processing will continue to cultivate the image that sparks and displayed on the monitor supervision.

In our project along with this feature we are adding up Co2 sensor for the prior detection for occurrence of fire and alsointegrating a pick and place arm for picking up an obstacle blocking the way or any other useful purpose. After detection of the fire at place it would send a message to the local fire substation alerting of fire at that particular location. We are also integrating IR camera for the model.

RELATED WORK:

[1] The work is based on the sensors and the main problem with the sensors that it will take time to detect the fire

Light Weight Image Super-Resolution with Adaptive Deep Residual Network

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ABSTRACT

The propose work is a single image super-resolution model based on Adaptive Deep Residual named as ADR-SR, which uses the Input Output Same Size (IOSS) structure and releases the dependence of up sampling layers compared with the existing SR methods. Specifically, the key element of our model is the Adaptive Residual Block (ARB), which replaces the commonly used constant factor with an adaptive residual factor. The experiments prove the effectiveness of our ADR-SR model, which can not only reconstruct images with better visual effects, but also get better objective performances.

Keywords: Single image super-resolution (SISR), AD residual network, Deep learning

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 consumption of the route but also to maximize the life time of each node in the network to increase the network lifetime. Energy efficient algorithms can be based on the two metrics: i) Minimizing total transmission energy ii) maximizing network lifetime. The first metric focuses on the total transmission energy used to send the packets from source to destination by selecting the large number of hops criteria. Second metric focuses on the residual batter energy level of entire network or individual battery energy of a node.

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 AODV protocol by implementing a balanced energy consumption idea into route discovery process. RREQ message will be

Seismic Behaviour of Structure in Zone 2 and 3 with Floating Column in Different Floors

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ABSTRACT

A floating column is supposed to be a vertical member starting from foundation level and transferring the load to the ground. In India many of the buildings are constructed with floating column. Floating columns are adopted in order to provide spacious hall and other amenities. The seismic forces generated at different floor level of the building need to be carried out to the foundation by shortest possible way which may not be the case when floating columns are provided. Providing floating columns may satisfy some of the functional requirements but structural behaviour changes abruptly due to provisions of floating columns. In this study analysis of RC structures with floating column in different seismic zones using ETABS is studied. The building is modelled using ETABS software. The models are G+10 RC buildings whereas, one is regular structure and others are structures with floating columns provided in different stories. In this thesis parameters such as storey displacement, storey shear and storey drift are computed using ETABS and the values extracted are compared with each other.

Keywords: Floating column, Seismic forces, Etabs, Storey displacement, Storey drift, Storey shear.

INTRODUCTION:

Modern multi-storey buildings are constructed with Irregularities such as mass irregularity, plan irregularity and vertical irregularity. And it is observed that most of RC structures with these kind of irregularities are undesirable for seismic activity. In this study we have chosen floating column irregularity which is stiffness irregularity comes under vertical irregularity. Stiffness irregularity is nothing but, a storey in which lateral stiffness is less than 60-70 percent of that of above or less than 70-80 percent of the average lateral stiffness of the three storeys above. In this study 4 models i.e, regular structure, structure with floating column in 1st floor, structure with floating column in 4th floor and structure with floating column in 9th floor are considered analysed for zone 2 and 3 using ETAB's. Results such as storey displacement, storey shear, storey drift for zone 2 and zone 3 are extracted from ETABS and compared the respective results with different models.

Floating Columns:

The floating column is a vertical member which rests on beam and transfers loads from beam to the column below it. Now a days multi-storey buildings constructed for the purpose of residential, commercial, industrial etc., with

Survey on Prediction of Despair via Social Media and Remedies for it

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ABSTRACT

Despair is common and serious medical illness that negatively affects how individual feels, the way individual thinks and act. Depression affects people from all walks of life, no matter what their background. It can affect people of all ages as well. Usually we can see individuals expressing their feelings on social networking sites (SNS) like Facebook, twitter, You tube, Instagram through the posts, comments, likes, dislikes etc. Data of each individual's activity on SNS can be collected by crowdsourcing. By deep analyzing and understanding these collective data of an individual we can identify positive and negative feelings of an individual. Through this we can come up with the best way of providing solution to depressed individual to overcome mental illness. We can use Naive Bayes algorithm which is a machine learning algorithm, used to classify the depression level into different levels and it also provides doctor's location near to the identified depressed individual. Understanding the latest depression statistics could increase awareness about mental health. Recognizing how widespread it is could also help reduce the stigma- which might encourage more people to seek treatment. Main concern of this survey is to find depressed individuals and approach them with the positive entities. By encouraging the depressed minds with positive joy, happiness, and positive feelings we can help an individual to overcome their negative thoughts and depression.

Keywords: Mind upset illness, Despair, Social Networking Sites, Naive Bayes.

INTRODUCTION:

Emotion is a fundamental element of human society. Emotion is a mental state variously associated with thoughts, feelings, behavioral responses and a degree of pleasure or displeasure. Positive emotions are naturally healthy for an individual but negative emotion causes negative effects on an individual. Depression is one such mental illness that negatively affects the health of a person. Depression is a serious medical illness that is proportional to depressed individual's ability to work, study, participation in social activities and having fun. According to research, there is no single cause of depression. Depression can be the result of brain chemistry, hormones and genetics as well as life experiences and physical health. In the modern day and age, internet has become an essential for everyone. It is an integral part of every individual's daily routines. One of the most important and popularly rising topics of general interest nowadays is social networking sites (SNS). It is very common for people to use social networking sites (SNS) nowadays to be in regular contact with their friends and relatives over internet. Emotions of people is exhibited on the social networking sites through the posts, comments, likes, dislikes etc. Social networking platform is best way to know person behavior, thinking style, mood, egoistic networks, opinions.

We don't talk much about depression as much as we talk about other diseases, but we will be shocked to know that 300 million people worldwide are suffering from depression. According to World Health Organization (WHO), India is the most depressed country in the world, followed by China and the USA. Who reports the India, China and the US are the most affected countries by anxiety, bipolar disorder and schizophrenia. A study reported in WHO, conducted for the NCMH (National Care of Medical Health), states that at least 6.5% of Indian population suffers from some form of the serious mental disorder. The average suicide rate in India is 10.9 for every lakh people and the majority of people who commit suicide are below 44years of age. The WHO estimates that 91.8% of all Chinese people with a mental disorder such as depression will never seek help for their condition. It's very shocking to know that Pakistan has only 750 trained psychiatrists, as reported in 2012. One in 6 people aged 10-19 years is suffering

Civilizing Diabetes Fortitude in Shrewd Wellbeing Utilizing Hereditary based Gathering learning calculation Way to deal with IoT Framework

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ABSTRACT

Persistent diabetes mellitus is one of the main sources of mortality all throughout the planet. One of the primary driver of this illness is the presence of high metabolites like glucose. In 2014, there were around 378 million diabetics around the world, with an expected weight of $ 13,700 every year. This will dramatically increase by 2030, as per the World Wellbeing Association (WHO) report. Subsequently, if diabetes can be anticipated dependent on certain factors, the expense of treatment can be altogether diminished by utilizing AI and highlight choice methods to help analyze diabetes early conclusion of diabetes - in other words it forestall diabetes movement and its numerous difficulties. It gets. In this paper, troupe learning calculations joined with cross breed highlight choice are utilized to all the more precisely analyze and foresee diabetes, through instructive information from genuine information on Indian diabetes patients distributed on the College of California site. The outcomes show that the proposed technique performs better compared to the fundamental strategies and precision comes to 93%.

Keywords: smart health, machine learning, IoT, ensemble learning, hybrid feature selection.

INTRODUCTION:

Continuous monitoring of patients or children will the many costs for the government and parents that ICT (information and communication technology) with artificial intelligence to reduce the costs of treatment. Diabetes is one of the leading causes of death worldwide; with the availability of vast amounts of medical information demonstrate the need for powerful learning tools to help medical professionals in the diagnosis of diabetes. Machine learning techniques are very helpful in diagnosing diabetes and increasing its efficiency. According to this research, diabetes is a vital issue and at the same time the most common disease in the world [1]. For this reason, diabetes has been considered as a chronic disease and is accounted the one of the most important health difficulties and also the fifth leading cause of death [2]. Therefore, diabetes is a chronic endocrine disorder that affects the body's metabolism and causes structural changes, so diabetes is one of the most common diseases in the human body that causes the disease. Since 2014; Next, the prevalence of disease has risen from 100 million to 422 million patients [3].The disease is usually divided into type 1 and type 2 diabetes, a type of diabetes that is a worldwide influential disease that is still on the rise and is one of the leading causes of mortality leading to the progression of the disease. It also helps the heart. Therefor; type 2 diabetes is a worldwide influential disease that is still on the rise and the one of the leading causes of mortality and at the same time in the progression of heart disease [4]. Other side effects can mention cataracts, glucose, Retinopathy (ophthalmic vascular disease). Health care in the simplest form of diagnosis and prevention or treatment of any medical damages plays an important role in providing a useful life for the community [5]. Therefore, efforts have been made to reduce the number of chronic disease screening tests to reduce overall costs. A probable solution is to use machine learning techniques in healthcare data that are used to find frequent patterns in a large database to obtain useful information. In addition, the prevalence of type 2 diabetes in adolescents and youngsters is significantly increased. In people

Study on Flexural Strength Characteristics of Fiber Glass Reinforced Concrete

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ABSTRACT

The present research work is carried to study flexural behaviour of concrete reinforced with glass fiber. Due to urbanization demand for construction materials are increased drastically in last few decades, now a days, the demand of river sand is very high so it's better to use the industrial by-product of Bottom Ash which is easily available and eco-friendly. In this present study Bottom ash (BA) as taken as replacement of natural sand for different variations of 0 %,10%,20%,30% and 40% BA with the addition of 0.2 % glass fibres as an extra ingredient to improve the strength properties.The laboratory experiment is carried out on concrete with respect to the M25 Grade of concrete .The laboratory programme includes the strength properties such as Compressive strength ,Split tensile strength, and flexural behaviour of reinforced slab was determined by two point loading using loading frame. The flexural behaviour in terms of deflection, cracking load, crack width is determined Finally the results shows that 30% replacement of bottom ash to the natural sand achieves optimum strength.

INTRODUCTION:

Concrete is important popular building material in the universe. For the present construction world is a challenge in the civil industry concrete with high strength aspects made with sustainable resources .concrete is a composite material is a mixture of cement, fine aggregate, course aggregate, water so that fills the space among the aggregate particles and glue them together . finally the mixture is placed in the forms and allowed to cure it becomes harden in the form of rock known as concrete .concrete is widely used to making for constructions work ,architectural structures, foundations, brick and pavements.

Bottom ash:

We can say that energy is the main support of modern civilization of the world over and the electric power from the thermal power stations is the important source of energy. In India about 70% of electricity generated is by burning of fossil fuels, out of which approximately 61% is continued by coal-fired plants. For about 380 million tonnes annual ash production which is more than the rest of all industrial wastes in India and china.

Coal bottom ash is a course granular and incombustible by product from coal burning furnaces .it is mainly composed of alumina ,silica and iron with small amount of magnesium, calcium sulphate etc. the particle size and appearance of bottom ash is same as the natural river sand. It will make more attractive by comparing these properties of bottom ash used as fine aggregate in concrete.

OBJECTIVES OF EXISTING RESEARCH:

The study targeted to use industrial waste to reduce the consumption of natural sand to ensure the strength of the concrete. The aim of the project research work is Bottom ash is introduced as replacement to natural sand at percentage variation of 0%, 10%, 20%, 30%, and 40 % and glass fiber is produced as wastes in the glass manufacturing industries are used at a constant 0.2% by volume of concrete as an extra ingredient to increase the strength properties of concrete slab panel have been casted for M25 grade of concrete.

Cloud Computing Forensic Science

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ABSTRACT

This section discusses the characteristics of cloud computing forensic science, elaborates on why cloud computing challenges traditional digital forensics methods, and describes what constitutes a challenge for cloud forensics. Many experts consider forensic science to be the application of a broad spectrum of sciences and technologies to the investigation and establishment of facts of interest in relation to criminal law, civil law, or regulatory issues. The rapid advance of cloud services requires the development of better forensic tools to keep pace. However, the resulting techniques may also be used for purposes other than legal and regulatory issues to reconstruct an event that has occurred. Cloud computing forensic science is the application of scientific principles, technological practices, and derived and proven methods to reconstruct past cloud computing events through the identification, acquisition, preservation, examination, interpretation, and reporting of potential digital evidence.

Keywords: cloud computing, forensic.

INTRODUCTION:

Cloud computing has revolutionized the methods by which digital data is stored, processed, and transmitted. One of the most daunting new challenges is how to perform digital forensics in varioustypes of cloud computing environments. The challenges associated with conducting forensics in different cloud deployment models, which may cross geographic or legal boundaries, have becomean issue.

NIST carries out many research activities related to forensic science. The goals of these activitiesare to improve the accuracy, reliability, and scientific validity of forensic science methods and practices through advances in its measurements and standards infrastructure. As part of these activities, the NIST Cloud Computing Forensic Science Working Group (NCC FSWG) is identifying emerging standards and technologies that would help solve challenges, that is, the mostpressing problems fundamental to carrying out forensics in a cloud computing environment to lawfully obtain (e.g., via warrant or subpoena) all relevant artifacts, as well as to provide capabilities for security incident response and internal enterprise operations.

RELATED WORK:

To better understand the correlation between the cloud forensic science challenges and their cloud-based root cause, the NCC FSWG analyzed each challenge's relationship to the cloud functional capabilities (cloud processes or solutions) identified in the Cloud Security Alliance's(CSA's) Enterprise Architecture (EA) [9]and leveraged by the NIST Cloud Security ReferenceArchitecture (CSRA) [10].

The CSA's EA, reproduced in Annex C, Fig. 1, covers the following domains:

a. Business Operations and Support (BOSS) – has capabilities associated with cloud ITservices to support an organization's business needs.
b. Information Technology Operation & Support (ITOS) – has capabilities associated withmanaging the cloud IT services of an organization.
c. Security and Risk Management (S & RM) – has capabilities associated with safeguarding cloud IT assets and detecting, assessing, and monitoring cloud ITrisks.

Multi-Scale Modeling of 2D and 3D Carbon/Carbon Composites: A Review

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ABSTRACT

In the present scenario composite materials have found wide verity of applications in the field of aerospace. There are many different types of composite which are used for different applications. Carbon fiber carbon matrix composites are used in high temperature applications. C/C composites can withstand a temperature of up to 2500K It is also very important to know mechanical properties of these C/C composites. In this work, different papers have been studied to understand the different modeling methods for finding the mechanical properties of 2D and 3D C/C composites. 2D C/C composites have good properties in only two directions such as x and y directions but not in z-direction, whereas 3D composites possess good properties in all the three directions. In this paper importance has been given to strength and stiffness of C/C composites. Finally it is found out that there are lots of papers which talk about elastic properties and damage modeling of 2D and 3D orthogonal composites. There are very limited papers available for analysis of mechanical properties and damage modeling of 3D woven composites.

Keywords: Carbon-Carbon composites, elastic properties, multi-scale modeling

INTRODUCTION:

Now a day's carbon fiber carbon matrix composites are widely used in aerospace industries because of its high corrosion resistance, superior mechanical properties, low coefficient of thermal expansion and also better frictional performance. There has been lot of research to know the microstructural characteristics and mechanical properties of 2D and 3D C/C composites. 2D C/C composites possess good properties only in in-plane stress field but not in out of plane stress field, whereas 3D C/C composites possess good properties in both the types. In this literature main concentration is given to 3D C/C composites but also on some of the 2D C/C composites which concentrate on out of plane properties.

DISCUSSION:

Shigang et al. [1] developed the numerical simulation based on uniaxial tensile test, and showed that manufacturing defect such as voids in the fiber yarn has greater influence on the performance of 3D orthogonal C/C composites. Further Shigang et al. [2] developed the multi scale model to analyse the damage behavior 3D orthogonal C/C composites and predicted the strength and stiffness with variation of temperature up to 2500K. His results shows that, young's modulus of C/C composite started decreasing after 1500K, in-plane tensile strength started decreasing sharply after 1900 K.

Secure File sharing Mechanism with OTP Service in Big Data Environment

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ABSTRACT

File sharing has been an essential part of this century. Using various applications, files can be shared to large number of users. For the purpose of storage, the Hadoop Distributed File System (HDFS) can be used. HDFS is mainly used for the unstructured data analysis. The HDFS handles large size of files in a single server. Common sharing methods like removable media, servers or computer network, World Wide Web based hyperlink documents. In the proposed project, the files are merged using MapReduce programming model on Hadoop. This process improves the performance of Hadoop by rejecting the files which are larger than the size of Hadoop and reduces the memory size required by the NameNode

Keywords: Hadoop, HDFS, Map Reduce, Name Node, Data Node, Task Tracker, Job Tracker.

INTRODUCTION:

File sharing means sending and receiving of different types of file (audio, video, and picture) within the same network or different network. File sharing is done using techniques like file storage, distribution and transmission. File sharing is the act of circulating or giving access to carefully put away data, for example, PC programs, media (sound, pictures and video), reports, or electronic books. It might be actualized through an assortment of ways. Earlier file sharing applications have a drawback, once the file sharing link is discoverable, the file can be accessed by unauthorized user. The Hadoop system itself is for the most part written in the Java programming dialect, with some local code in C and charge line utilities composed as shell contents. Despite the fact that MapReduce Java code is normal, any programming dialect can be utilized with "Hadoop Streaming" to actualize the "guide" and "lessen" parts of the client's program. Hadoop is an open-source programming structure utilized for circulated capacity and handling of dataset of enormous information utilizing the MapReduce programming model. Managing big data is being a big problem to many organizations. Due to this reason, file sharing faces many problems. Every day 2.5 Quintillion bytes are created [12]. Hadoop can easily handle by Hadoop File Distributed System (HDFS). This proposed system has an advanced security i.e. OTP service. The sender will send the required file to receiver. While opening the file, the receiver has to enter an OTP number, which he will receive from the sender. This provides the system more security as the OTP is accessible to authorized user.

LITERATURE SURVEY:

In recent times organization process large quantity of data. This data is difficult to manage by any software as it is in large volumes. An easier solution to this problem is to buy many computers which will provide more storage option and increase the processor speed. But again this method becomes costly and not practical for small organizations. Another option is to build a big cluster, store the files in it and access them as and when needed by the organization. This concept of forming clusters is used in Hadoop which is an open source framework used for the purpose of data storing and distribution. [1]NHAR: Archive and Metadata Distribution! Why Not Both? By

Experimental Investigation of Mechanical Properties of Tin Reinforced with Aluminium (6061) Composite and Scanning Electron Microscope Analysis

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ABSTRACT

The present work is an experimental investigation for the mechanical properties of tin reinforced aluminium alloy (Al 6061) composites samples, processed by stir casting method. Four composites of aluminium alloy 6061with tin composition varying i.e. 5%, 10%, 15% & 20% by weight were used. The aluminium alloy 6061 was procured in the form of ingot and the tin in powder form. First the aluminium alloy was melted in the furnace which was gas (LPG) fired and once a molten state was reached tin powder was introduced in the molten metal. The mixture was stirred continuously to bring about uniformity in the mixture and casted in a silica mould. Upon solidification the cast was removed, machined and tested for mechanical properties. The mechanical properties studied under this experiment are tensile test, compression test and hardness test all under room condition. Scanning electron microscope (SEM) images of all the four composite (of Al-Sn) are studied. In this experiment stir casting method was employed as it is the simplest and most effective method for castings. From the experimental readings it is found out that the hardness was consistently decreasing as tin is softer material than aluminium 6061 alloy, the tensile strength of the composite decreased for 5%,10%,15% of tin and slightly increased for 20% of tin and compression strength of the material kept on decreasing consistently as the percentage of tin increased in the material. When compared with the base pure aluminium alloy the composites specific weight decreased.

INTRODUCTION:

Composite materials (also called composition materials or shortened to composites) are materials made from two or more constituent materials with significantly different physical or chemical properties, that when combined, produce a material with characteristics different from the individual components. Composite materials offer superior properties to conventional alloys for various application as they have stiffness, strength and wear resistance. The high cost and difficulty of processing these composites restricted their application and led to the development of discontinuously reinforced composites.

Aluminium (Al) is a silvery white and ductile member of the poor metal group of chemical elements. Al is abundant, light and strong metal which has found many uses. Like all composites, aluminium-matrix composites are not a single material but a family of materials whose stiffness, strength, density and thermal and electrical properties can be tailored. The matrix alloy, the reinforcement material, the volume and shape of the reinforcement, the location of reinforcement and the fabrication method can all be varied to achieve required properties. Regardless of the variations, however Al composites offer excellent thermal conductivity, higher shear strength ,excellent abrasion resistance ,high temperature operation ,no flammability, minimal attack by fuels and solvents and the ability to be formed and treated unconventional equipment.

Improved Smart Reading System for the Electrical Energy Meters

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ABSTRACT

This paper presents a novel design for smart electric energy meters without changing the traditional electricity meter. It collects these readings in a central unit using the Internet. This design is useful for the purpose of avoiding human errors and frequent visits specifically when the homeowner is not around as well as having difficult access to remote areas. Also to keep up with the developed countries that use AMR (Automatic Meter Reading). The distinguishing point of the proposed design is that no change has been made to the internal fitting of the currently available conventional counter. The point is to install a camera facing the meter that takes a picture of the meter reading. Then, this image is processed with a Raspberry Pi3 (as processing unit) and converted to text using the OCR (optical character recognition) algorithm while recording the reading history. After that, it will be sent to the cloud (represented by the google drive spreadsheet) via the Internet, and this information will be collected from all consumers and will be ready to monitor electrical loads, record bills, give loads and costs reports to consumers, and thus participate in rationalizing electrical energy consumption.

Keywords: AMR; Raspberry Pi3; OCR; Cloud.

INTRODUCTION:

The meter used to measure the power used by the electrical load is known as an energy meter. Energy is the total energy a load consumes and uses in a specific period of time. It is used in household and industrial AC circuit to measure power consumption. Where the electricity companies install these meters at every subscriber, such as homes, factories, administrative and government buildings, and others, after connecting the electrical network to their units to supply loads such as lighting systems, fans, air conditioners, office equipment, and any other equipment with electricity.

The electricity meter industry has gone through several basic stages: electromechanical meters, electronic meters, and smart energy meters. The increasing global demand for electricity [1] raises important issues about how to meet these energy needs in a sustainable manner. Where it is necessary to search for alternatives that allow the efficient use of energy, which considers electricity a basic resource for social and economic development and a basic asset for managing life in society [2] [3] [4].

Despite the increasing development, the idea of cognitive smart metering and its interface with supervisory and energy management systems may stimulate the development of new equipment and methodologies to improve energy system control, efficiency, reliability and safety. The modernization of the energy meter is a fundamental issue of the electricity market and modern society. The problems related to the traditional electric meter reading system started to increase day by day for several reasons [5], including: population growth, human errors, remote areas, environmental conditions, and frequent visits.

As a result of these problems, a device that reads the electricity meter automatically and called it AMR (Automatic Meter Reading) [6] [7] was designed. This device collects energy information and sends it to the main stations of the electrical office for the purpose of its analysis and bill calculation. This reading system will reduce AMR from human errors resulting from reading, as well as access to remote areas that cannot be visited. This system is not only used to calculate the electricity meter, but also to read water meters [8] and gas [9] meters in developed countries.

Prediction of Depression via Social Media and Ways to Provide Solution

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ABSTRACT

Depression is common and serious medical illness that negatively affects how individual feels, the way individual thinks and act. Depression affects people from all walks of life, no matter what their background. It can affect people of all ages as well. Usually we can see individuals expressing their feelings on social networking sites (SNS) like Facebook, twitter, You tube, Instagram through the posts, comments, likes, dislikes etc. Data of each individual's activity on SNS can be collected by crowdsourcing. By deep analyzing and understanding these collective data of an individual we can identify positive and negative feelings of an individual. Through this we can come up with the best way of providing solution to depressed individual to overcome mental illness. We can use Naive Bayes algorithm which is a machine learning algorithm, used to classify the depression level into different levels and it also provides doctor's location near to the identified depressed individual. Understanding the latest depression statistics could increase awareness about mental health. Recognizing how widespread it is could also help reduce the stigma- which might encourage more people to seek treatment. Main concern of this survey is to find depressed individuals and approach them with the positive entities. By encouraging the depressed minds with positive joy, happiness, and positive feelings we can help an individual to overcome their negative thoughts and depression.

Keywords: Mental illness, Depression, Social Networking Sites, Naive Bayes.

INTRODUCTION:

Emotion is a fundamental element of human society. Emotion is a mental state variously associated with thoughts, feelings, behavioral responses and a degree of pleasure or displeasure. Positive emotions are naturally healthy for an individual but negative emotion causes negative effects on an individual. Depression is one such mental illness that negatively affects the health of a person. Depression is a serious medical illness that is proportional to depressed individual's ability to work, study, participation in social activities and having fun. According to research, there is no single cause of depression. Depression can be the result of brain chemistry, hormones and genetics as well as life experiences and physical health. In the modern day and age, internet has become an essential for everyone. It is an integral part of every individual's daily routines. One of the most important and popularly rising topics of general interest nowadays is social networking sites (SNS). It is very common for people to use social networking sites (SNS) nowadays to be in regular contact with their friends and relatives over internet. Emotions of people is exhibited on the social networking sites through the posts, comments, likes, dislikes etc. Social networking platform is best way to know person behavior, thinking style, mood, egoistic networks, opinions.

We don't talk much about depression as much as we talk about other diseases, but we will be shocked to know that 300 million people worldwide are suffering from depression. According to World Health Organization (WHO), India is the most depressed country in the world, followed by China and the USA. Who reports the India, China and the US are the most affected countries by anxiety, bipolar disorder and schizophrenia. A study reported in WHO, conducted for the NCMH (National Care of Medical Health), states that at least 6.5% of Indian population suffers from some form of the serious mental disorder. The average suicide rate in India is 10.9 for

Structural Analysis and Optimisation of Industrial Crane Arm

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ABSTRACT

A crane is a type of machine, generally equipped with a hoist, wire ropes or chainsthat can be used both to lift and lower materials and to move them horizontally. Aim is to reduce the weight of the crane by reducing the thickness at few areas where ever applicable and also maintaining the weight carrying capacity.Structural analysis is the determination of the effects of loads on physical structures and their components. Structures subject to this type of analysis include all that must withstand loads, such as buildings, bridges, vehicles, machinery, furniture, attire, soil strata, prostheses and biological tissue. Structural analysis incorporates the fields of applied mechanics, materials science and applied mathematics to compute a structure's deformations, internal forces, stresses, support reactions, accelerations, and stability. The results of the analysis are used to verify a structure's fitness for use, often saving physical tests. "Structural analysis " will be carried out to find the following.

1. *Mechanical response of the structure, subjected to applied loads and boundary conditions.*
2. *Analysis results will include deformed shape of the structure, displacements and the stresses in various locations.*
3. *Following Pre checks are done before Boundary Conditions and loads are applied to the model*
   - *i. Elimination of Free Edges and T-connections in the model*
   - *ii. Minimizing Triangular elements.*
   - *iii. Assignment of material and physical properties to the respective components created*
4. *Optimize to reduce weight and stress concentration on the ARM and displacements due to weight.*
5. *The Final design is achieved by removing the unwanted material and by reducing the thicknesses were ever applicable from the Basic design*

Keywords: Stresses, Displacement, Optimization, Weight reduction

INTRODUCTION:

A mobile crane is "a cable-controlled crane mounted on crawlers or rubber-tired carriers" or "a hydraulic-powered crane with a telescoping boom mounted on truck-type carriers or as self-propelled models." They are designed to easily transport to a site and use with different types of load and cargo with little or no setup or assembly[1] .

The crane for lifting heavy loads was invented by the Ancient Greeks in the late 6th century BC.[2] The archaeological record shows that no later than c.515 BC distinctive cuttings for both lifting tongs and lewis irons begin to appear on stone blocks of Greek temples.

Structural analysis is the determination of the effects of loads on physical structures and their components. Structures subject to this type of analysis include all that must withstand loads, such as buildings, bridges, vehicles, machinery, furniture, attire, soil strata, prostheses and biological tissue. Structural analysis incorporates the fields of applied mechanics, materials science and applied mathematics to compute a structure's deformations, internal forces, stresses, support reactions, accelerations, and stability.[3] The results of the analysis are used to verify a structure's fitness for use, often saving physical tests. Network analysis methods are essentially management control techniques and were developed during the years 1957 and 1958, the foundations of game theory were laid by von Neumann in 1928 and since then it has been applied to solve several mathematical economics and military problems. Only during

A IOT Frame work for Accident Detection, Vehicle Monitoring and Accident Alert

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ABSTRACT

Road accidents rates are very high nowadays, especially two wheelers. Timely medical aid can help in saving lives. This system aims to alert the nearby medical centre about the accident to provide immediate medical aid. The attached accelerometer in the vehicle senses the tilt of the vehicle and the heartbeat sensor on the user's body senses the abnormality of the heartbeat to understand the seriousness of the accident. Thus, the systems will make the decision and sends the information to the cloud, connected via Wi-Fi module (ESP-01) and accelerometer and heartbeat sensor. The system will send text message to the nearest medical centre and friend by sharing the exact location of the accident that can save the time to assist the victim. Initially, the GPS continuously takes input data from the satellite and stores the latitude and longitude values in AT89s52 microcontroller's buffer. If we need to track the vehicle, we have to send a message to GSM device, by which it gets activated. It also gets activated by detecting accident on the shock sensor connected to vehicle. Parallelly, deactivates GPS with the help of relay. Once GSM gets activated it takes the last received latitude and longitude positions values from the buffer and sends a message to the particular number and information is stored in cloud which is predefined in the program. Once message has been sent to the predefined device the GSM gets deactivated and GPS gets activated.

Keywords: Accelerometer, GPS, GSM, Arduino UNO

INTRODUCTION:

The motor vehicle population is growing at a faster rate with the development economic and community. Accidents and the death rate due to road accidents are also increasing at an alarming rate. Most of the accident deaths that happen are due to the lack of immediate medical assistance, on the roads like express highways. A facility for providing direct medical aid to the accident area can reduce the fatality to a higher extends. Thus, comes the idea of an alert system that senses the accident and its seriousness to alert the nearby medical center for providing ambulance or medical aid to the accident area. The proposed system will check whether an accident has occurred and identify the seriousness of the injury to the accident victim/driver. Once the decision of serious accident has taken, the system will check for the nearest medical center and notify them about the incident. The rescue team can rush to the spot immediately without any delay as the correct location will be communicated by the GSM and GPS also to cloud about the information regarding accident victim. The system will also send a message to the friends and relatives to inform them about the incident. Accident detection and the alert system has been extensively studied over the past several years. Research work in this field has proposed a Telemetric model which has three main modules.

The system is intended to capture the location of the vehicle through GPS receiver, send the location information to vehicle owner's mobile number through SMS and also to the telemetric operator server through GPRS. The monitoring system main aim is to give Security to all vehicles. When the car is stolen, the location data from the

Investigation of Impact Damage of PMC Specimens using SEM

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ABSTRACT

The work presented in this paper investigates the the results of microscopic examinations of delaminations and transverse cracks detected with scanned image microscopy, from which the initiation and propagation mechanisms of the impact-induced damage were discussed. Visual examination of the impacted samples reveals that the damage in the fibres was developed around the point of impact, which results in considerable strength loss.

INTRODUCTION:

The impact-induced damage is the most serious type of damage for fiber reinforced composites. In particular, delamination caused by impact loading is known to produce significant reductions in the residual compression strength of fiber reinforced laminated composites. This is a major problem associated with the structural integrity of composite compression components. Much effort has therefore been devoted to the study of the effects of impact-induced damage on the load-bearing capacities of these components in the past 30years. In the course of these studies, attempts have been made to investigate the damage mechanisms.

Scanning Electron Microscopy - SEM - is a powerful technique in the examination of materials. It is most widely in metallurgy, geology, biology and medicine. The user can obtain high magnification images, with a good depth of field, and can also analyse individual crystals or other features. A high-resolution SEM image can show detail down to 25 Angstroms, or better. When used in conjunction with the closely-related technique of energy-dispersive X-ray micro-analysis (EDX, EDS, EDAX), the composition of individual crystals or features can be determined. There are many different ways that scanning electron microscopy and X-ray microanalysis can aid studies of materials. The scanning electron microscope (SEM) uses a focused beam of high-energy electrons to generate a variety of signals at

the surface of solid specimens. The signals that derive from electron-sample interactions reveal information about the sample including external morphology (texture), chemical composition, and crystalline structure and orientation of materials making up the sample. In most applications, data are collected over a selected area of the surface of the sample, and a 2-dimensional image is generated that displays spatial variations in these properties. Areas ranging from approximately 1 cm to 5 microns in width can be imaged in a scanning mode using conventional SEM techniques (magnification ranging from 20X to approximately 30,000X, spatial resolution of 50 to100nm).