3.3.1 Number of research papers published per teacher in the Journals notified on UGC website during the last five years

SL No.	Title of paper	Name of journal	Year of publication	ISSN number	Page number
1	Flow and Heat Transfer Analysis of a Thin Film Ferromagnetic Liquid over an Unsteady Stretching Sheet	Biointerface Research in Applied Chemistry	2023	2069-5837	3
2	Exploring the intermolecular interactions in Co-crystals of 4-cyanopyridine with 4-bromobenzoic acid: Experimental and computational methods	Materials Today Proceedings	2023	2214-7853	4
3	Phased array and its implementations for 5G Wireless Communication: A Review	International journal of Early childhood special education	2023	1308-5581	5
4	Design and Performance Analysis of High Throughput and Low Power RNSBased FIR Filter Design on FPGA	International Journal of e-Collaboration	2022	1548-3681	6
5	An Improved Multipath Energy Aware On-Demand routing protocol for MANETs	Journal Of Communications	2022	1796-2021	7
6	Secure intrusion detection system routing protocol for mobile ad-hoc network	Global Transitions Proceedings	2022	2666-285X	8
7	Influence of wear parameter on Al7075 reinforced with TiO2 subjected to cryogenic treatment using Taguchi’s approach	AIP Conference Proceedings	2022	1551-7616	9
8	Influence of nanosilica on tensile properties in fiber reinforced polymer hybrid composite carbon/kevlar/epoxy woven fiber	AIP Conference Proceedings	2022	1551-7616	10
9	Investigating the Influence of Nanosilica and Fiber Layer Sequence on Interlaminar Shear Strength in Carbon-Kevlar-Epoxy Polymer Hybrid Nanocomposite	Revue des Composites et des Matériaux Avancés	2023	1958-5799	11
10	HYDRO CHEMICAL INVESTIGATION OF GROUNDWATER QUALITY AND DEFLUORIDATION BY HERBAL METHOD	European Chemical Bulletin	2023	2063-5346	12
11	Design and implementation of pervasive DA based FIR filter and feeder register based multiplier for software defined radio networks	International Journal of Pervasive Computing and Communications	2021	1742-7371	13
12	The effect of a magnetic field on the onset of Benard convection in variable viscosty couple-stress fliuds using classical Lorenz model	Application Of mathematics	2021	0862-7940	14
13	Numerical investigation of ferromagnetics liquid film flow over an unsteady streching surface in the presence of radiation and aligned magnetic field.	Heat Transfer	2022	2688-4534	15
14	Non linear Chandrasekhar-Benard convection in temparature dependent variable viscosity Boussinesq-Stokes suspension fluid with variable heat source/sink	Application Of mathematics	2022	0862-7940	16
15	Flow and Heat transfer analysis of a thin film ferromagnetic liquid over an unsteady stretching sheet	Biointerface Research in Applied Chemistry	2022	2069-5837	17
16	Investigation of flexural properties of hybrid woven Carbon-Kevlar- epoxy composites added with nanosilica filler	Materials Today Proceedings	2022	2214-7853	18
17	Investigation of Dynamic Mechanical Behavior of Nanosilica Filled Carbon-Kevlar-Epoxy Polymer Hybrid Nanocomposite	Annales de Chimie - Science des Matériaux	2022	0151-9107	19
18	Development Of Framework To Recognize Akhara-Muni Character Using Ann	Turkish Online Journal of Qualitative Inquiry	2021	1309-6591	20
19	A Review of Deduplicate and Significance of Using Fuzzy Logic	Springer	2022	2193-1801	21
20	Morse Code Based Secured Authentication System through Artificial Intelligence	Gradiva Review Journal	2022	0363-8057	22
21	AN EXPERIMENTAL INVESTIGATION ON STRENGTH CHARACTERISTICS OF STEEL FIBER REINFORCED CONCRETE WITH DIFFERENT ASPECT RATIO	GIS SCIENCE JOURNAL	2022	1869-9391	23
22	Cold chain logistics services using IOT	Journal of Huazhong university of science and technology	2021	1671-4512	24
23	Challenges of Tracking Area Update in 5G	LINO	2021	0211-2574	25
24	A review on LNA in biomedical applications	Journal of Huazhong university of science and technology	2021	1671-4512	26
25	Smart and secured assistance for visually impaired person	Journal of Interdisciplinary Cycle Research	2021	0022-1945	27
26	Dual Tree Wavelet Transformation Using Wavelet Filters	Shodhsamhita	2021	2277-7067	28
27	Performance analysis of low energy and high speed DA RNS based FIR filter design for SDR application on FPGA	International journal of circuits, systems and signal processing	2021	1998-4464	29

28	Design and Implemenation of High Speed and low power consumption Moore-based loopback adder on FPGA	International journal of intelligent unmanned systems	2021	2049-6427	30
29	Non-Linear Rayleigh- Benard Magneto convection in Temperature-Sensitive Newtonian Liquids with Variable Heat Source	Journal of the Indian Math. Society vol.88, PP.08-22, 2021.	2021	0019-5839	31
30	Rayleigh–Bénard and Bénard–Marangoni magneto convection in variable viscosity finitely conducting liquids	Heat Transfer	2021	2688-4534	32
31	Facial emotion recognition using convolutional neural networks	Materials Today: Proceedings	2021	2214-7853	33
32	Predicting Diabetes Mellitus Using Artificial Neural Network	Utkal Historical Research Journal	2021	0976-2132	34
33	Monitoring and controlling of Unmanned aerial vehicle by Electrical actuators	Journal of Interdisciplinary Cycle Research	2021	0022-1945	35
34	Low frequency Sub-band image compression using JSS Algorithm	Journal of Interdisciplinary Cycle Research	2021	0022-1945	36
35	Hybrid renewable power system Design using solar, piezo electric and Wind energy	Journal of Interdisciplinary Cycle Research	2021	0022-1945	37
36	Area optimised FIR filter design using BWM and CLA	International Journal of Advanced Science and Technology	2019	2005-4238	38
37	Hot powder forging behaviour analysis of sintered AISI 8740 PM steels for automotive applications	Materials today: Proceedings	2020	2214-7853	39
38	Neotectonic evidences associated with Achankovil shear zone using morphometric analysis and field investigations	Springer journal	2020	2363-6211	40
39	Strength characteristics of high performance concrete using Bagasse ash and slag sand	International Journal of Emerging Trends in Engineering Research	2020	2347-3983	41
40	A Proficient Web Recommender System using Hybrid Possiblistic Fuzzy Clustering and Bayesian Model Approach	International Journal of Intelligent Engineering and Systems	2018	2185-3118	42
41	Influence of heat treatment on Cr and Fe-rich precipitates in thermally aged duplex steels	Emerging materials research	2018	2046-0155	43

Article
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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

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.

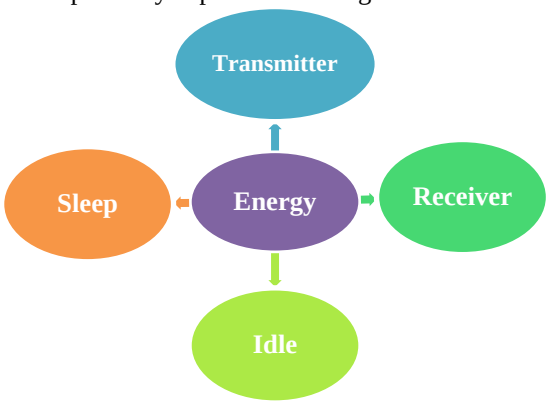

Fig. 1. Modes of energy consumption in wireless mobile ad-hoc network.

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

Influence of wear parameter on Al7075 reinforced with TiO_2 subjected to cryogenic treatment using Taguchi's Approach.

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Abstract. Nano metal matrix composite are obtaining a extensive range of applications in marine, aerospace industry and defense which is due to higher wear resistance, light weight, higher strength, outstanding corrosion resistance and high stiffness. These nano metal matrix composites usually selected for application in the engineering filed since they meet the desired mechanical and wear qualities. In the current research study, preparation of Al7075/TiO_2 nano metal matrix composite were done by varying titanium oxide in 0, 1, 3 and 5wt.% through liquid metallurgy route. The cast samples were set as per G99 ASTM standard to conduct the wear test. Cryogenic treatment for the prepared specimens were carried out at 196℃ for 24 hrs. The study reveals that increasing wt.% of titanium oxide decrease the wear rate. However, wear rate initiate to be increase with increase in load applied and sliding velocity. Further, Taguchi's approach is used to evaluate the percentage contribution of wear parameter and to authenticate the experimental results for wear rate.

Keywords. nano particle, cryogenic, wear, TiO2, liquid metallurgy

INTRODUCTION

Over the last 20 years nano metal matrix composite has been extensively favorable. The modern development for the upcoming applications is to enhance the tribological and mechanical charactertics of nano metal matrix composite [1]. These nano composites are progressively receiving to be noticeably attractive material for cutting edge technology and their properties maybe customized by the use of suitable nano size reinforcement in the aluminum heat treatable alloy [2]. Recent study focused on use of nanoparticles evaluation on heat treated aluminum alloy on tribological and mechanical properties. Most of these studies focused on use of different nanometric reinforcing materials to the mechanical and tribological properties [3]. Al matrix reinforced with different particles posses' high capacity for advanced structural application, as well as better higher temperature resistance [4]. The usage of ceramic particles as reinforcement material in the aluminum 7075 matrix led to improved tribological and mechanical properties. With the use of stir casting technique the Al7075 matrix composite can be successfully fabricated which will improves the hardness, UTS, yield strength, tensile strength due to uniform distribution of reinforced particles [5]. For producing metal matrix composites several techniques were developed such as stir casting, squeeze casting, powder metallurgy. Among this method stir casting route is the economical and simplest method to fabricate the particle reinforced composite material [6]. The important issue faced in the manufacturing of metal matrix composite [7] is nano ceramic particle possess low wettability with the molten matrix, which will not permit the preparation of metal matrix nano composites by traditional casting process [8]. The processing of Al7075 [9] based composite with nano particle reinforcement through stir casting process which includes melting the Al alloy and by stirring with the particle reinforcement. Stirring parameter such as pouring temperature, stirrer speed, vortex formation, temperature of molten metal, content of reinforcement in order to obtain the less porosity, oxide formation, agglomeration of particles and to prevent the interfacial reaction during stir casting process [10]. In recent year there are number of processing method for processing metal matrix composite. Fabrication technique can also vary considerably according to the type of reinforcement used [11].

Cryogenic heat treatment plays no noticeable variations in the aluminum alloy after subjecting to heat treatment. The datum that cryogenic is impractical to witness exterior physical change in the metal, a superior grain structure with better density is detected by using optical microscope [12]. Cryogenic treatment generally consists of cooling the test specimen from room temperature to cryogenic temperature for a specific duration surveyed by soaking it at cryogenic temperature [13] for 24 hrs. and then reheating it to room temperature for particular time duration. The soaking temperature and duration will have a greater amount in the properties change due to alteration in the grain structure [14]. Taguchi method [15] used to evaluate the signal to noise (S/N) ratio, ANOVA [16] for wear charactertics of Al7075 with graphite and nano TiO_2 particles using L_9 orthogonal array [17]. In view of the above extensive literature survey on Al7075 matrix composite, most of the research worked on preparation of metal matrix composite by reinforcing with particles in

Influence of Nanosilica on Tensile Properties in Fiber Reinforced Polymer Hybrid Composite Carbon/Kevlar/Epoxy Woven Fiber

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Abstract. Present work focused on investigation by the influence of adding nanosilica (NS) with epoxy in different weight percentages (wt. %) like 0.5, 1.0, 1.5 and 2.0 on tensile properties in fiber reinforced polymer hybrid nanocomposite having five layers of carbon, four layers of Kevlar woven (0/90º) fiber (5C4K) with epoxy prepared by vacuum assisted resin infusion molding (VARIM) technique. The high-speed shearing method used for better dispersion of the nanosilica in the epoxy resin. The tensile test specimens were prepared as per ASTM D3039 standard to investigate the tensile properties. The results of tested specimens showed that 0.5 wt. % of nanosilica with epoxy composite have higher tensile properties as compared to pure epoxy and other weight percentages.

Keywords: Carbon, Kevlar, Nanosilica, Hybridcomposite, Vacuum assisted resin infusion molding.

INTRODUCTION

In recent years fiber reinforced polymer composites are playing very important role in the material selection for components manufacturing in the field of automobile, aerospace, space, marine, sports and infrastructure industries due to their good weight to strength ratio and high modulus of elasticity as compared to conventional materials. Presently more research work is in progress to investigate the influence of adding nano material with polymer matrices on mechanical, electrical and thermal properties in fiber reinforced polymer composites.

The most commonly used thermosetting polymer matrix in the fabrication of fiber reinforced polymer composites is epoxy resin, which has low shrinkage, light weight, low toxicity, high adhesion to substrate, high stiffness, high strength, high electrical insulation, high amenability to various methods of composite fabrication, ease of fabrication, dimensional stability and having good water and chemical resistance characteristics also excellent heat and moisture resistance [1-2]. The new class of polymeric composites can be developed by the addition of inorganic nanomaterials. The inorganic nano fillers such as silica, titania, aluminium oxide, carbon nanotube, nanoclay, multiwall carbon nanotube, halloysite, which are most commonly used in the fabrication of composites [2-10]. Woven fibers like

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Investigating the Influence of Nanosilica and Fiber Layer Sequence on Interlaminar Shear Strength in Carbon-Kevlar-Epoxy Polymer Hybrid Nanocomposite

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Keywords:
carbon, Kevlar, nanosilica, epoxy, shear, nanocomposite, polymer, hybrid

ABSTRACT

Present research work concentrated investigating the influence of adding nanosilica with epoxy matrix in varying weight percentages such as 0, 0.5, 1.0 and 1.5 on interlaminar shear strength in fiber reinforced polymer hybrid nanocomposite and fiber layer sequence. The polymer hybrid nanocomposite is having five carbon, four Kevlar layers (5C4K) and five Kevlar, four carbon (5K4C) layers of woven fibers. High speed shearing technique was used for the better dispersion of nanosilica with epoxy resin. Vacuum assisted resin infusion molding technique was used to fabricate the hybrid polymer nanocomposite laminates. Post curing was carried out effectively. Interlaminar shear strength test carried out according to ASTM D2344. The tested specimens show that 0.5 weight percentage of nanosilica with epoxy provides higher interlaminar shear strength than other weight percentage of nanosilica in both types of stacking sequences. The fiber layer sequence 5C4K shows better interlaminar shear strength as compared to 5K4C.

1. INTRODUCTION

Fiber Reinforced Polymer (FRP) composites made of polymer matrix reinforced with fibers. During fabrication of these composites, the extensively used synthetic fibers are glass, carbon, Kevlar and thermosetting polymer matrix as epoxy, vinylester, polyester. FRP composites have emerged as a key material in recent years for mechanical, space, aerospace, marine, automobile, sports and medical field due to their good weight to strength ratio, corrosion resistance, good stiffness, good wear resistance, dimensional stability, best damping behavior, along with adhesion quality, chemical resistance and thermal stability. The mechanical, thermal and tribological properties are found to be good when compared to conventional materials [1-4].

One of the distinguishing characteristics of fiber reinforced polymer is that their characteristics can be tailored to meet a variety of loading conditions and these composites were fabricated by using woven (0°/90°) fibers, because the good strength is observed in two perpendicular directions.

Thermoset polymer matrix epoxy resin is the most often utilized in fabrication of polymer composites, which has low weight, excellent adhesion, low shrinkage after curing, good chemical resistant properties and high thermal resistance, good heat and moisture resistance [5, 6]. In polymer composite, the fiber plays vital role in providing the strength to the composite. Carbon fibers has better properties such as high strength, modulus, chemical resistance and low weight, thermal expansion properties [7] and Kevlar fibers also have good properties like impact resistance, high strength to weight ratio, low density and toughness [8].

The hybrid polymer composite is made up of two or more forms of reinforcement materials and offers balanced strength, stiffness, thermal stability, enhanced fatigue resistance, fracture toughness and along with impact resistance as compared to mono fiber composite, hence they become more popular in the recent years [9, 10]. Presently, a growing number of studies are investigating the effect of filling nanomaterial with matrix material to investigate the physical, mechanical, thermal and tribological properties in FRP composites, to provide the enhanced material properties to the materials engineers for designing the products in various engineering applications.

The exceptional physical, mechanical, and tribological properties, hybrid polymer nanocomposites have garnered extensive interest from the academic and industrial communities. The hybrid polymer composites have undergone significant changes in their mechanical, physical and tribological characteristics as a result of the incorporation of nano materials such as silica, halloysite, aluminum oxide, titanium dioxide, multiwall carbon nanotubes, and nanoclay [11-20].

The incorporation of nanomaterials into a polymer composite decreases shrinkage and improves its physical, mechanical, and tribological properties. Numerous variables, including the kind of polymer, the type of nanoparticle, shape, size and working conditions, have an impact on the physical, mechanical and tribological properties.

To design the composite structures, the interlaminar shear strength (ILSS) plays a crucial material feature and which can be determined using short beam shear testing.

Nayak et al. [20] investigated the impact of nanomaterials $SiO_2/Al_2O_3/TiO_2$ addition to epoxy matrix on ILSS in glass-epoxy fiber polymer composites. The composite laminates of

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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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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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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Received January 12, 2021. Published online September 16, 2021.

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

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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.

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

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MKoppalu Shankarappa Basavaraj,
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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

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Article
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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 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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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

V. Ranjith, M. K. Dhananjaya, P. Yamini Sahukar, M. Akshara & Partho Sharothi Biswas

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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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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 flows; 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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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].

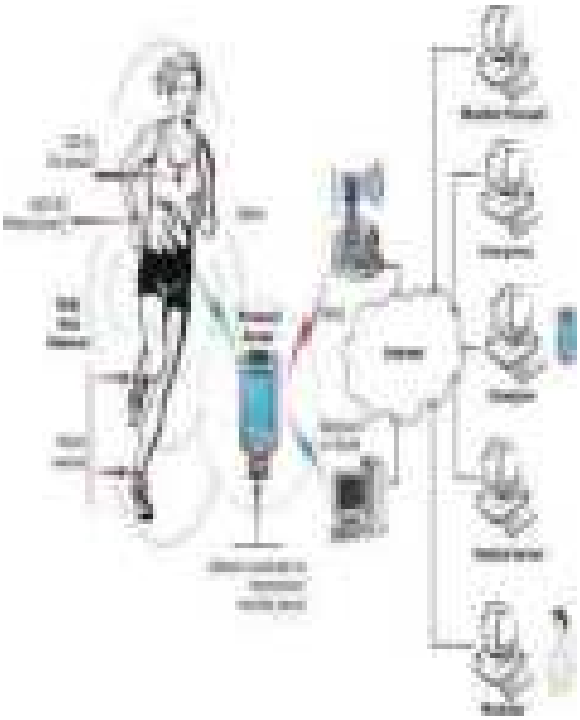

Figure 1: The architecture of Wireless and Smart Healthcare Monitoring Systems [2]

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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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.

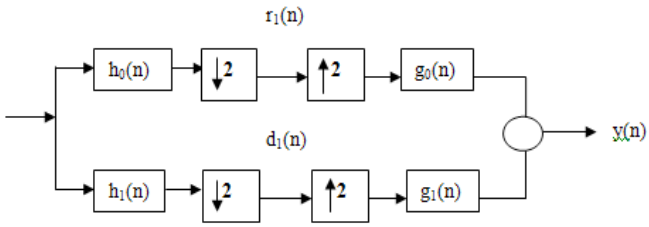

Fig. 1 Basic filter bank for wavelet transformation

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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

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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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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CNN

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

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

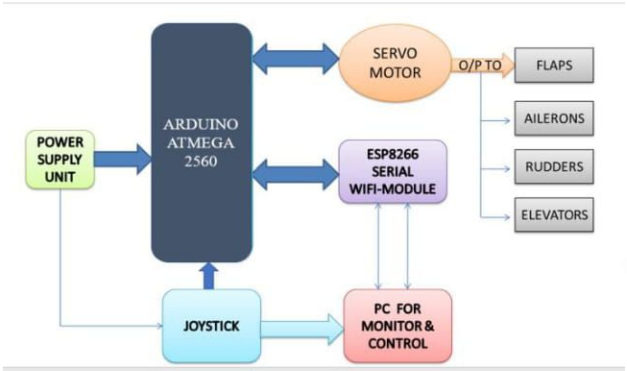

Figure 2.1: Block diagram of Unmanned Aircraft System

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.

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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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.

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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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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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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

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Influence of heat treatment on Cr and Fe-rich precipitates in thermally aged duplex steels

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Abstract

In this investigation, three different heat treatment conditions were evaluated to correlate the microstructural changes of duplex steels with their mechanical properties. In the first heat treatment condition, the samples were aged at 475°C up to 1000 h. This resulted in the formation of alpha and alpha-prime precipitates in ferrite matrix due to spinodal decomposition, which in turn embrittled the samples. In the second heat treatment condition, the embrittled samples were reversion heat-treated at 550°C up to 120 min, which resulted in dissolution of the alpha and alpha-prime precipitates. This resulted in an increased ductility of samples. In the third heat treatment condition, the reversion heat-treated samples were re-aged at 475°C for 100 h in order to check applicability of reversion heat treatment. The results showed that spinodal decomposition again remained as the primary mechanism of embrittlement, and it was also found that there was not much difference in the re-embrittlement rate.

Full Text

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