






Effect of graphene oxide on strength properties of cementitious materials: A review

T. Naresh Kumar, K. Vishnu Vardhan  , M. Hari Krishna, Pull Venkata Nagaraja

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Abstract

Reinforcing nanomaterials (0D nanoparticles, 1D nanofibre, 2D nanosheets) in cementitious matrix presents an opportunity to enhance cementitious composites at nanoscale. Reinforcing graphene based nanomaterials in cementitious matrix, enhancement of mechanical and durability properties has been observed at 0.02%, 0.04%, 0.06%, of Graphene Oxide in past research. This paper reviews a comprehensive overview of graphene based nanomaterials (mostly graphene oxide based nanomaterials) at dosages of 0.0%, 0.02%, 0.04%, 0.06%, 0.08% of Graphene Oxide in imparting and altering the properties of cement composites and concrete composites and also points future scope in construction field.

Introduction



Ordinary Portland Cement is a most popular construction material of choice in civil engineering field. Cement in concrete is the binding material, holds the aggregate together in presence of water to produce concrete. However, performance of cement and concrete based composites needs to be improved due to their brittle nature resulting in poor resistance to crack formation, low tensile strength. Many investigations have been carried out to improve the performance of cement based composites by employing the properties of cement based composites with admixtures [1], [2], [3], [4], by incorporating the supplementary cementitious materials [5], [6], [7], [8], and by reinforcing the fibers [9], [10], [11], [12], [13], [14]. However, fibers fail to cease the crack initiation at nanoscale. M. S. Konsta-Gdoutos et.al., [15] has been reported that incorporation of nanomaterials in the cementitious composites can control the nano and microscale cracks at initial stage. Newly produced techniques in nanotechnology paved to produce nanosized particles, fibers and sheets [e.g. graphene oxide, nanoalumina, carbon nanotubes], can be used as reinforcing material in cementitious composites to alter the performance of cement based composites [16]. Among the all introduced nanomaterials, graphene oxide appeared to be an ideal material in imparting the mechanical properties to the cementitious composites. Many past attempts has been reported that the significant improvement in mechanical properties of cementitious composites with the use of graphene oxide in cement mortar composites [17], [18], [19], [20], [21], [22], [23], [24], [25], [26]. [19], [24], investigated that significant improvement in mechanical properties could be due to the reaction between carboxylic acid group and calcium silicate hydrate producing strong covalent bonds. The current review discusses the mechanical properties of graphene oxide cementitious composites and also the future perspective.


Nanotechnology has wide applications in scientific fields such as construction, telecommunications, informatics, medicine. However, the broadest definition states that the materials having the sizes of individual building blocks are less than 100nm, at least in one dimension [27].

Graphene is a single layer of sp² carbon atoms packed in a honeycomb lattice found in the basic structure of other graphitic material with various dimensionalities [28], [29]. Graphene oxide (GO), reduced graphene oxide and graphene nanoparticles are some of the other graphene-based nanomaterials [30]. Among all graphene oxide is widely used material in many fields [31], [32]. Graphene oxide (C₅₄H₁₇+O+ (OH)₃+COOH) is exfoliated into layers from graphite oxide produced by the graphite oxidation [28], [33], [34], [35]. Graphene oxide has a hexagonal network system of carbon atoms with sp² and sp³ hybridised orbital's having hydroxyl and epoxide groups found mostly on its basal plane and carbonyl and carboxyl groups at its edge [36], [37], [38], [39]. Graphene oxide has hydrophilic property because of the presence of the functional groups [32], [40].




Effect of graphene oxide on fresh, hardened and mechanical properties of cement mortar

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Abstract

Nanotechnology has already had an effect on a number of areas, including civil engineering. Cementitious composites containing a variety of nanomaterials have been identified as a novel material with enhanced microstructure, mechanical, and durability properties. In the world of civil engineering, graphene oxide has recently emerged as one of the most promising nanomaterials. However, adding graph oxide to the cement mortar improves compression strength, tensile strength division, and bending strength. The ultra-high-resolution field scan microscope (FE-SEM) showed that the cement matrix was well dispersed and no aggregates were found in samples with fracture surfaces of 0.08 percent GO to weight from cement. When comparing the growth of calcium silicate hydrates in GO cement mortar to regular cement mortar, SEM results showed that GO cement mortar grew faster (C-S-H Gel).

Introduction

Reinforcing materials have become a standard practise in cement-based composites to enhance their mechanical strength. Due to their simple construction process, low energy consumption, and wide variety of raw materials from which they can be manufactured, cement-based materials are widely recognised as one of the most important building materials. With the widespread use of cement-based composites, defects such as increased self-weight, brittleness, and tensile strength must urgently be addressed. Nanotechnology is an integral aspect of modern science and technology. It has been discovered that using nanomaterials to modify cement materials and enhance mechanical properties is feasible. Graphene oxide (GO) nanosheets, which are graphene-containing additives, have an extremely high surface-defined surface, excellent mechanical properties, and excellent thermal conductivity, as well as more active oxygen groups on their surface, such as hydroxyl, carboxylic, and epoxy groups. GO-cement composites are simple to make and separate in cement pastes due to their extremely high hydrophilicity. The effect of graphene oxide on cement mortar mechanical properties and the mechanism of cement mortar strengthening revealed an increase in mechanical properties [1]. According to the results of the effect of graphene oxide with low.

oxygen content on Portland cement based composites[2], the modification of OPC with such a type of GO improves the fluidity of cement paste and mortar just after mixing. In the cement mortar, graphene oxide is varied in proportions of 0.1% to 0.15 percent, and bottom Ash is varied in proportions of 0%, 20%, 40%, and 60% by weight of natural fine aggregate, resulting in mechanical and toughness properties [3]. Increased content of water dispersed GO reduces workability, but fine powder GO has less effect [4]. Experiments with GO have shown strong reinforcing and microstructural features. Self-healing and self-repairing materials use Go's nano reinforcing and water dispersion properties [5]. The main goal of this study is to increase Young's modulus in cement mortar by incorporating polymers and graphene oxide [6], the optimum amount of GO required to achieve full concrete compressive, tensile, and flexural strength[7]. Graphene oxide in cement mortar provides better results than standard cement mortar [8]. In cement mortar, the mechanical and durability properties of graphene oxide were discussed. Hydration rate, setting time, heat of hydration, workability, strain and harm sensing, and electromagnetic inference are all areas where this particular form of cement excels [9]. The addition of GO increases viscosity, reduces fluidity, and reduces motor setting time [10], the ideal amount of graphene oxide to achieve the highest compressive, flexural, and tensile strength [11]. Epoxy resins were mixed with varying amounts of GO (1.5–6 percent). The experimental results showed that the young's modulus, tensile power, and hardness all improved [12]. The tensile strength of cement mortar increased with GO material, reaching 1.5 percent, a 48 percent increase in tensile strength in FE-SEM observation [13].

1 **Customer satisfaction in construction by implementation of TQM: A Case study at**
2 **KADAPA (Residential apartments)**

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20 **Abstract:**

21 *Now a days the growth of Construction Company depends up on the customer satisfaction. The success of*
22 *the construction project represents the percentage of satisfaction achieved. Even the continuous*
23 *improvement is achieved by higher satisfaction of customers. The present research involves, validation of*
24 *TQM empirical model which is implemented in construction and it is by measuring customer satisfaction*
25 *(CS). The CS is measured by indirect method i.e., objective type considering different dimensions Quality*
26 *assurance and delivery(QAD), Environment and safety(E&S), Employee skill(ES), Team management(TM),*
27 *and Site Supervision (SS). Under each dimension different performance factors are identified. The*
28 *questionnaire is framed based up on performance factors, later the responses are analyzed by descriptive*
29 *and statistic reliability tools.*

30

31

1.Introduction

32 For a competitive construction firm, CS is one of the success metric and it must be an objective for the
33 construction company for continuous improvement. Due to the global competition in the construction
34 world, great attention is shifted towards customer relationships and CS has dragged dominant attention due
35 to the increased competition in construction world globally (Sami et.al, 2008). Also Customer satisfaction
36 is very important for every organization to retain customer and their loyalty Goetsch et al (2000). Even
37 customer satisfaction at initial stages of construction is significant Torbica and Stroh (2001). Furthermore
38 quality management has great significant relation with customer satisfaction, that represents higher quality
39 management leads to higher customer satisfaction Chimene(2014). Also Individual members, decision
40 process, structures, interests and goals can also affect CS. (Brockmann, 2002). Even Contractor skill in all
41 directions such as site supervision, response to the complaints services etc., must be improved to attain

An Experimental Investigation On Mechanical Properties Of Geopolymer concrete by using GGBS, Granite powder, Marble powder

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ABSTRACT:

Concrete, being material of choice in construction industry could be composed of naturally available materials. Cement in concrete is a binding material which produced by making use of natural materials leading natural materials to deplete. Thus, using the alternative materials which are waste products such as Ground Granulated Blast Furnace slag, Granite powder and Marble Powder without using cement along with some chemicals such as Sodium Silicate and Sodium Hydroxide to bind the concrete ingredients together to produce geopolymer concrete. An attempt has been made to find out an optimum mix for the geopolymer concrete by replacing Ground Granulated Blast Furnace slag with Granite powder and Marble powder. Compressive strength and tensile strength were carried out on concrete at 14 days and 28 days, Flexural strength were carried out at 28 days and 56 days. Rapid Chloride Permeability Test were carried out at 28 days.

Keywords: Ground Granulated Blast Furnace Slag, Granite powder, Marble powder, sodium silicate (Na_2SiO_3), Sodium hydroxide (NaOH)

1. INTRODUCTION

Environmental pollution is a major issue now-a-days. As far as construction industry has concerned, the production of cement leads mostly in polluting the environment. Geopolymer concrete could be an alternative material for normal concrete since it uses the waste products in place of cement which reduces the pollution also. In general, polymer concrete uses polymers to bind the concrete ingredients unlike the normal concrete, thus usage of water will also be very less. The polymers in this study were obtained from the manufacturers and the marble powder was taken from the marble powder stock yard at puttur and Granite powder was taken from the granite cutter at Tadipatri. The Ground Granulated Blast Furnace Slag gets reacted in presence of alkaline solution and makes all other materials in concrete to stick together to form a strong material which can resist against forces on it. Because of this sticky nature it can be moulded into any shape like normal concrete.

The influence of geopolymer concrete with these materials is investigated through compression test, split tensile test for 14 and 28 days, flexure strength test for 28, 56 days and RCPT for 28 and days of grade M30 concrete.

During the research these specimens are cured at room temperature.

GGBS+G.P 100+0, 90+10, 80+20, 70+30, 60+40 and 50+50.

GGBS+M.P 100+0, 90+10, 80+20, 70+30, 60+40 and 50+50

GGBS+G.P+M.P 70+20+10, 60+20+20 & 50+20+30 (G.P is constant 20)

GGBS+M.P+G.P 70+20+10, 60+20+20 & 50+20+30 (here M.P is constant 20)

EFFECT OF INCORPORATION OF IRON BLAST FURNACE SLAG, BARYTES POWDER AS REPLACEMENT TO SAND AND CEMENT AND ADDITION OF GLASS FIBER ON THE MECHANICAL PROPERTIES OF M₃₀ GRADE CONCRETE

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Abstract: Cement concrete is the most widely used manmade construction material in the world. However, for the production of cement naturally available materials are required which should be used effectively and economically for sustainability. There are many waste products produced from various industries whose safe disposal has become a challenge now a days. In order to make the waste into resource, one of the finest solution is to utilize them in cement concrete which is proved to be a wonderful material that can accept many waste industrial products without becoming detrimental to environment. Iron blast furnace slag is one of the waste materials that is produced from steel plants. About 120 million tones of iron blast furnace slag is produced annually in the country. Glass fiber is an easily available material. In the present study it is proposed to investigate the mechanical properties of the cement concrete using the iron blast furnace slag as fine aggregate duly replacing the sand at 20%, 40%, 60%, 80% and 100% in M30 grade concrete. Barytes is an inert material with high specific gravity About 90% of the country's reserves are available in the local mines in kadapa district. Barytes is used in high density concretes. It is also used in oil drilling industry, paints and other purposes. In the present investigation, barites powder up to 10% is used as replacement to cement for improving micro structure and durability of concrete. Finally, the iron blast furnace slag as fine aggregate, barites powder as partial replacement to cement and glass fiber are used in concrete of M30 grade and the mechanical properties are investigated. It is observed that the mechanical properties of glass fiber reinforced concrete are improved by the use of barytes powder and iron blast furnace slag.

Keywords: Barites powder, Iron Blast Furnace Slag, Glass fiber Reinforced concrete

1. INTRODUCTION

Cement concrete is one of the most widely used construction material in the world. A study by the Indian institute of technology Bombay has estimated that the annual demand of sand in urban India is about 60 Million metric tons [1]. Blast furnace slag in India is used mainly in cement manufacture and other unorganised works such as landfills and railway ballast. The price of Iron blast furnace slag vary from plant to plant [2]. Sustainability is important to the well-being of the society. There is an every need to use locally available materials with low energy cost, high durability and low maintenance requirements. Barytes or Barites in soft crystalline mineral form of barium sulphate (BaSO₄) Mangampeta deposit in Kadapa district Of A.P, India is the single largest barytes deposit in the world [2] greater amount of chloride ion were fixed during the hydration of C₃A synthesized the presence of BaSO₄. Synthesized C₃A but also OPC mortar can fix greater

An Experimental Investigation on Implementation of Magnetic Water and Effect of Basalt fiber on Properties of Concrete

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Abstract: *In this research the investigation of strength properties of concrete using basalt fiber reinforced concrete is done using magnetic water. The basalt fiber is a natural fiber which is obtained from the basalt rock which is melted at high temperature. The basalt fiber is a non metallic and high resistance to the temperature and less weight with good strength properties. From this study found that in the concrete strength improve with basalt fibre and magnetic water. It improves in all aspects of properties like the compressive strength, split tensile strength, flexural strengths respectively. Here used M30 grade of concrete mix proportion along with magnetic water while mixing, which is prepared by passing water through magnetic field of PERMAG device, water changes its micro structure which helps in hydration process with cement. By using this MFTW (Magnetic Field Treated Water), there is no need to use the superplasticizers to improve workability it improves the strength of concrete and reduces W/C ratio there by reduces the consumption of cement content. As per the results, the compressive strength is Compressive strength, split tensile strength and flexural strengths are increased and durability properties also tested by acid attack test.*

Keywords: Magnetic water, permag N406, Basalt fibre

1. INTRODUCTION

Concrete plays a vital role in the construction field, and the concrete is a manmade material, which is used day by day in large amount by worldwide for many constructions many investigations have been doing on the concrete to find new things about it and the concrete is one of the subjects which contains broad field. The conventional concrete is the one, which contains the low strength and durable properties, such as tensile strength, resistance of cracks, compressive strength, water absorption etc., due to nominal concrete mix. The high strength concrete is used for those type structures. The high strength is obtained due to additional mixing materials in concrete.

The fibers which are used in concrete will increase the tensile strength, flexural strength, toughness, impact, fatigue resistance, abrasion resistance and ductility characteristic. Steel, glass, carbon, aramid, polypropylene, nylon and polyester these are fibers which are commonly used. These each of fibers which lend varying properties to the concrete and in addition, the character of concrete changes with the fiber material, geometries, distribution, orientation and densities. The basalt fiber is found to be the best fiber when compared to remaining fibers in recent investigation years. The basalt fiber is obtained from the basalt rock which is melted at high temperature and solidified magma in open air which is called igneous rocks. It is available in India near Deccan plateaus. In world wide East Asian countries among which Russia. Where this type of rock is hugely available. The basalt fiber is a natural fiber and cost effective compared to other fibers like glass and carbon fibers. Using these fibers in concrete, ultimate strength and Young's modulus will increase and it adds stiffness to the concrete. The basalt fiber has the best insulating property, resistance to heat and chemicals as compared to other fibers. The basalt fiber is

An Experimental Investigation on Mechanical Properties of Geopolymer Concrete by Using Silica Fume, Mild Steel Slag and GGBS

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Abstract: Concrete is used in many ways as they have good mechanical and durability properties, it is used widely next to the water. In India per capita consumption of cement is 235kgs and globally average of 520kgs. Production of ordinary Portland cement releases large amount of carbon dioxide, majorly automobiles pollutes the atmosphere. To overcome this expense and to save our environment we have to produce an Eco-Friendly concrete with the complete replacement of cement. Here we can produce Geo polymer concrete using chemical reaction as an innovative construction material. To generate Geo-polymer concrete we use sodium hydroxide (NaOH) and sodium silicate (Na₂SiO₃) liquid Alkaline Activators. Its mechanical properties are investigated through strength of compression, split tensile and flexural strength for 14,28 and 56 days.

Keywords: Geo polymer Concrete, Alkaline Activators, Sodium hydroxide (NaOH), Sodium silicate (Na₂SiO₃).

1.INTRODUCTION

Concrete is that pourable mix of cement, fine Aggregate, Coarse aggregate and water that hardens into super strong building material., the scope for concrete as a structural material has widened. Concrete is brittle materials it has great compressive strength than flexural strength, it is used widely next to the water. In India per capita consumption of cement is 235kgs and globally average of 520kgs. Production of ordinary Portland cement releases large amount of carbon dioxide major are still automobiles it pollutes the atmosphere. To overcome this expensive and to save our environment we have to produce an Eco-Friendly concrete with the complete replacement of cement. Here we can produce Geo polymer concrete using chemical reaction as an innovative construction material. To generate Geo polymer concrete we use sodium hydroxide (NaOH) and Sodium silicate (Na₂SiO₃) liquid alkali activators. This experimental investigation is to produce an eco-friendly concrete using alkaline activators, these alkaline activators acts as binding material can replace cement 100%. GGBS, mild steel slag and silica fume are used as supplementary material to replace with cement, GGBS is the waste product of the industries where iron is manufactured. In this process, iron ore is burnt and formed into the furnace and the resulting molten slag floats at a temperature of about fifteen hundred to sixteen hundred centigrade temperature, above the molten iron. Mild steel slag is a waste product produced while gauging the mild steel material into nails, this mild steel slag is harvested from the local industrial area in Kadapa district from VKY Nails company. Specific gravity of this steel slag is 3.45 and the water absorption is 1.87. Silica fume is also referred as micro silica or also condensed silica fume. It is used as artificial pozzolanic admixtures.

Effect of Incorporation of Iron Blast Furnace Slag, Barytes Powder as Replacement to Sand and Cement and Addition of Glass Fiber on The Durability Properties of M₃₀ Grade Concrete

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Abstract: Ordinary Portland cement is a leading material used in construction industry. Cement concrete is an universal material and the second largest material consumed after water. However, cement concrete is brittle, weak in tension and flexure. Many studies have been conducted to improve the mechanical and durability properties of opc concrete. Sand is naturally available material and iron blast furnace slag is a waste product generated from the manufacture of steel. Barytes is a mineral and it is available at cheaper cost locally. Glass fibers improve the mechanical properties of concrete. In the present investigation, an attempt is made to study the durability properties of M₃₀ grade concrete incorporated with iron blast furnace slag as replacement to sand from 20% to 100% at 20% increment and barytes powder as replacement to cement 5%, 7.5% and 10%. Studies were also conducted on the durability properties of M₃₀ grade concrete with 1% glass fiber, cement replaced by barytes powder at 5%, 7.5% and 10% and sand replaced with iron blast furnace slag at 60% acid resistance, alkaline resistance, chloride permeability and water permeability tests were conducted to find the durability of concrete. It is observed that the durability properties of M₃₀ grade concrete can be improved by incorporation of iron blast furnace slag fine aggregate as partial replacement to sand and barytes powder as replacement to cement up to 7.5% and addition of glass fiber 1%. Further the experimental results show that sand can be replaced with locally available iron blast furnace slag as fine aggregate in M₃₀ grade concrete.

Keywords: Barites powder, Iron Blast Furnace Slag, Glass fiber Reinforced concrete

1. INTRODUCTION

Cement is a widely used material in the construction. Cement is a chief material in the concrete which acts as a binding material in presence of water and produces concrete which gives strength and can resist weathering actions. Natural river sand is widely used as fine aggregate in OPC concrete in India and across the world at large. Sand is ubiquitous in construction and industrial production because it is cheap, versatile and easy to acquire yet all indications are that we are approaching a future where access to this resource is a critical barrier to sustainability and the full costs of uncontrolled sand extraction rates are exceeding natural sand replenishment rates [1]. The environmental and social impacts of sand extraction is an issue of global significance [2]. Blast furnace slag has been used extensively as a successful material for replacement material for Portland cement in concrete materials to

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A Techno-Economic Feasibility Analysis of Renewable Energy-Based Marine Micro-Grid for Cruise Ship Applications: A Case Study Simulation

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Introduction

The high usage of fossil fuel energy could create a lot of visible damage to the environment. Alternative energy production technologies such as solar, wind, and biomass energies can mitigate these issues and promote sustainability (Farid, 2016; Jin et al., 2016; TFRI, 2015). Existing cruise ships' energy requirements were mainly supplied by conventional energy technology. Here, the approach is sharing the energy demand of cruise

ABSTRACT

This article mainly deals with the design and developments of marine micro-grid for cruise ship applications. The incorporations of the solar PV array with existing fossil-fuel-based generators and the replacement of an engine-based propulsion system into the electric propulsion system have shown enormous improvements in the technical performance and optimal operations of the system. The proposed hybrid marine micro-grid (HMMG) system design and development has created more influences on the system investment flows and environmental pollutant mitigation. Here, the hybrid micro-grid model has been developed with necessary multi-objective functions and operating constraints. The optimum techno-economic feasibility analysis has been carried out with an energy-balanced loss of load probability algorithm, which proved that the planned energy management system has a highly commendable and efficient configuration to achieve good system performance with viable economics for a sustainable energy society. Keywords: design of marine micro-grid system, electric propulsion system, techno-economic feasibility analysis, optimum sizing and performance, sustainability developments

ships among traditional and renewable resources. The electric power supply to the cruise ship based on a hybrid energy modeling approach (Ghenai et al., 2019) has been attempted as a case study on Sweden ships. The significant energy utilization has been taken from the diesel engine and reduced environmental pollution by 9.8% due to the enhancement of renewable energy sources. A novel approach to reduce ships' energy consumptions during harbor stays (Yuan et al., 2020) has suggested developing a waste heat recovery technology through an organic Rankine cycle.

A novel approach to reduce ships' energy consumptions during harbor stays (Chen et al., 2020) exists with a super-capacitor-based energy storage system. Also, the corresponding system performance, storage capability, and inherent power quality issues have been verified. The different battery chemistries' behavior with a hybrid renewable energy (HRE) electrification system for residential applications (Krishnamoorthy et al., 2020) has been characterized by real village case studies and includes the techno-economic analysis terms of life cycle cost and backup system anatomy. An HRE electrification system for residential

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Abstract:

Python is a flexible programming tool for all kinds of technological and engineering tasks of academicians, researchers, etc. The variations in the terminal voltage will affect the relative power of the synchronous generator, these variations in the terminal voltage will mitigate by controlling the generator field excitation. This goal will achieve with the help of an Automatic Voltage Regulator (AVR), but unfortunately, the AVR solely cannot control the variations in terminal voltage effectively. It needs a supplementary control like a PID controller to achieve the goal. In this research paper, the PID coefficients are evaluated, in a Python environment, using Good gain and Pattern search tuning algorithms (proposed tuning methods). The robustness of the proposed controllers is evaluated by finding the maximum allowable uncertainties in nominal parameters for different first peak overshoots. The simulation results indicate that the proposed tuning methods give a good voltage stability performance in terms of time-domain specifications (including parameter uncertainties and external disturbances) than the other tuning methods.

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The rapid increase in energy demand must be matched with the rapid increase in energy supply, but unfortunately, this match is difficult so the traditional grid is suffering from blackouts. Hence, there is a need for an innovative approach to energy issues. This research work focuses on the practical design of the stand-alone Solar Photovoltaic system for domestic application considering the clearness of the sky, solar insolation variations, etc. The calculations that are involved in this work were done based on the daily load profile, geographical location of the selected place. The cable size in various stages of the proposed PV system is calculated. The break-even period of the proposed PV system is estimated as 12 years (approximately). The proposed system will reduce 75.48% of electricity bills and mitigate 7.48 tons of CO 2 emissions per annum. The percent power loss of the proposed PV system due to the soiling effect was also calculated. The major novelties of this research lie on load profile estimation based on the availability of the sun in a day, and CO 2 emissions mitigation, and soiling effect on the PV system power loss.



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Enhancement of Voltage Profile in the Distribution system by Reconfiguring with DG placement using Equilibrium Optimizer

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KEYWORDS

Network reconfiguration;
 Distributed generation;
 Metaheuristic;
 Equilibrium optimizer;
 Voltage profile

Abstract As the load steadily rises in a distribution system (DS), electrical power generation is improved. Inserting Distributed Generation (DG) unit in a DS has benefits such as enhancement in voltage profile and decreased power losses. In combination with optimal size, these advantages can be obtained to inject DG in the optimal location. Reconfiguration is another framework for optimizing the voltage profile and reduction of energy loss. Furthermore, reconfiguring the distribution network and installing the DG would ultimately improve system efficiency, which is undoubtedly challenging task. In this paper, equilibrium optimizer (EO) is explored to find out how to reconfigure the distribution network and how best DG can be positioned. For the IEEE-33 bus. Reliability Analysis is also done. The suggested method is implemented in MATLAB R2020A platform software. Outcomes of the suggested Technique based on the EO is compared with the existing techniques. There is Substantial improvement in voltage profile in addition to the decline in loss of power and reliability indexes (EENS, SAIFI, and SAIDI) for different cases of System with DG placement and System.

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1. Introduction

Distributed generation (DG) idea was stimulated for the electrical sector, which is a profitable option. Power flows through distribution systems and possesses radial configuration. As the

demand is increasing gradually, it leads to various issues. At the distribution level, approximately 70 percent losses occur, while at the transmission level, 30 percent losses occur. Distribution systems are also a significant concern at present. The losses at the stage of distribution are around 7.5 percent. To minimize losses, power sources such as DGs, capacitor banks and so on are usually favored. In the literature on the positioning of DGs [1], various techniques have been proposed.

Today's world, Generation Power companies are heading towards rising their expenditures and maximizing consumer

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Abstract

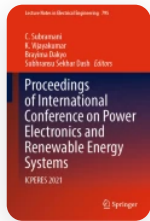
This paper deals with simultaneous scheduling of machines, automated guided vehicles (AGVs) and tools in a multi-machine flexible manufacturing system (FMS) considering the transfer times of jobs to minimize makespan (MSN). Only one copy of each type of tools is made available due to economic restrictions, and the tools are stored in a central tool magazine (CTM) that shares with and serves for several machines. Jobs and tools among machines are carried by AGVs and tool transporter (TT). This simultaneous scheduling problem is highly complex in nature as it involves job operations sequencing on machines, allocation of tools and AGVs to job operations and associated trip operations including the times of dead heading trip and loaded trip of AGVs. This paper presents a nonlinear mixed

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A Trasformerless Buck–Boost Converter as Maximum Power Point Tracker for Battery Charging

| Conference paper | First Online: 22 November 2021

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Abstract

DC–DC converters are utilized to interface the Photovoltaic source to the battery for charging purposes. A non–isolated (NI) DC–DC buck–boost converter has been employed as a

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Abstract:

An Energy Micro-Grid is a set of energy networks that represent all of a community's energy needs. Energy storage systems (e.g. electrochemical storage) seem to be a potential option for enabling a large penetration of renewable energy sources in our traditional grid, taking into account prices, supply protection, technical sophistication, and ease of setup. It proposes an information acquisition (micro-grid) that contains wind and solar PV capacity, as well as battery energy storage (BES), into a three-phase power system that feeds the time-varying load. Switching controls and the self-configuration of the Micro-grid are clarified as essential issues of boosting power quality (PQ), device maintainability, nonlinear power control, and resource utilization. The grid voltage source converter (GVSC) and machine voltage source converter (MVSC) are converters. The MVSC receives its evolving signals from a widely used waveform cost estimating, as well as encoder-less rotor speed and rotor direction measurements from a wind turbine-powered synchronous generator (SG). The switching controls and the reconfiguration of the micro-grid are addressed on imperative aspects of improving power quality. Reduced oscillations were observed in the weight variable and

Performance analysis of hybrid techniques for evaluation of power transmission cost and loss allocation based on transmission reliability margin ☆

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Performance Analysis of Hybrid Techniques for Evaluation of Power Transmission Cost and Loss Allocation Based with Transmission Reliability Margin



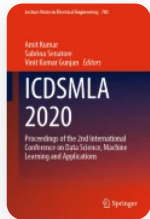
The cost allotment of the transmission system is based on reliability, which is a significant problem for efficient transmission cost allotment. In this paper, a hybrid technique is suggested to allocate and minimize the embedded cost of transmission based on the reliability margin by permitting its users for the transactions under the Deregulated power system market. The hybrid technique combines the Elephant Herd Optimization (EHO) algorithm and the Fuzzy Logic Controller (FLC). The Elephant Herd Optimization algorithmic program is impressed by the swarming activities of elephant grouping. The FLC is utilized to boost the performance of the Elephant Herd Optimization Method. Initially, the Optimal Power flow is analyzed using the Newton-Raphson (N-R) approach. The objective function is to define and analyze the power loss, capacity cost, Expected Transmission Margin Unit (ETMU), reliability cost, and embedded cost for the base case. After that, the transmission system's contingency and analysis of the embedded cost and power loss are analyzed. The outcomes of the

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Abstract

A novel single maximum power point tracking (MPPT) strategy for Hybrid PV and wind energy system (WES) to track the maximum power is proposed in this paper. The proposed MPPT technique constitutes of artificial neural network (ANN) based radial basis function network (RBFN) control strategy. The hybrid PV and WES is coupled to the grid through



Disk margin based robust stability analysis of a DC motor drive

Pasala Gopi^a  , Suresh Srinivasan^a, Murugaperumal Krishnamoorthy^b

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Abstract

This research paper investigates optimal tuning of PID co-efficients using the Tree-Seed Algorithm. A DC motor drive with a PID controller is considered a simulation example. The step response of the DC drive with Tree-Seed algorithm-based PID controller is compared with Ziegler Nichols (closed-loop) method and Skogestad Internal Model Control. In this research, the Disk-based margins are proposed to investigate the feedback loop for robust stability against gain and phase uncertainty (i.e the gain of open-loop is increased or decreased by 50%, and the phase is by $\pm 27^\circ$) for various values of skew, σ . The motivation for using the disk margins is the limitations of the classical margins. For the specified uncertainty, the safe uncertainty of DC motor drive with Tree-Seed Algorithm based controller is identified as 3.47 times the specified uncertainty, and the disk margins are computed as the gain variation between 9.1% and 1100% of the normal value, and the phase variation of $\pm 80^\circ$. The analysis identifies that the optimal Disk margins are obtained for the DC motor drive (with Tree-Seed Algorithm-based PID controller) for zero skew value. Finally, it is proved from the MATLAB simulation results that the DC motor drive with Tree-Seed Algorithm-based PID controller possesses good robustness and a wide range of



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Articles

Practical simultaneous scheduling of machines, AGVs, tool transporter and tools in a multi machine FMS using symbiotic organisms search algorithm

N. Sivarami Reddy  , D. V. Ramamurthy, K. Prahlada Rao & M. Padma Lalitha 

Pages 153-174 | Received 20 Jan 2020, Accepted 29 Nov 2020, Published online: 18 Jan 2021

 Cite this article  <https://doi.org/10.1080/0951192X.2020.1858503>



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ABSTRACT

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This paper addresses machines, automated guided vehicles (AGVs), tool transporter (TT) and tools simultaneous scheduling in a multi-machine flexible manufacturing system (FMS) to minimize makespan (MSN). The transfer times of tools and jobs are considered. Only one copy of each type of tool is made available due to economic restrictions. The tools are stored in a central tool magazine (CTM) that shares with and serves for several

In this article

Design of PI Speed Controller for 3-Ph Converter fed DC motor drive using Symmetrical Optimization

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This research paper focuses on the mathematical model of DC motor drive fed from the 3-Ph converter and the design of the PI speed controller for its speed control. To evaluate the gain coefficients of the PI speed controller, Symmetrical Optimum criteria are proposed. The proposed criterion is easier to understand than other advanced control methods. Using this criterion the gains of the PI controller are obtained by developing the mathematical model of the DC motor drive. This controller can be easily implemented for real-time applications of keeping motor speed at any desired set-point speed under varying operating conditions. The speed performance using the proposed method was compared with the S-curve method in MATLAB. The simulation results, with constant operating speed, indicate that the proposed criterion provides superior speed performance than the S-curve method. A similar speed response can be obtained with the selected PI gains for variable speeds. Finally, a comparative study has been done to highlight the proposed method benefits.

Keywords: Symmetrical Optimum Criteria; DC motor drive; Converter; PI Controller

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[http://dx.doi.org/10.6180/jase.202112_24\(6\).0003](http://dx.doi.org/10.6180/jase.202112_24(6).0003)

1. Introduction

1.1. Literature review

Practically, compare to AC drives, the DC drive speed control is simple and less expensive but they required more maintenance than AC drives and they are not suitable for high speed applications because of commutator. With the used of Chopper, it possible to get a variable DC voltage from a fixed DC voltage and with the use of Controlled Rectifiers a variable dc output voltage is obtained from a fixed ac voltage. The Controlled Rectifiers and Choppers made a revolution in modern industrial control equipment and variable-speed drives due to their ability to supply a continuously variable dc voltage [1]. Most of the industrial drives and processes consume DC power with different voltage levels. For example, the Trolley and Subway cars mainly run with fixed DC source but they requires a conversion of fixed voltage DC source to a variable voltage DC source

for their speed control [2]. In [3] the authors have proposed a novel boomerang trajectory control scheme, which omits the reaching phase and follows a semi-elliptical and semi-circular path for a quick convergence. The PID controller is the most popularly used control technique for many decades even though, there is a lot of development in control theory and technology. This is because of robust performance for a wide range of operating conditions. In addition, most of the researcher has given a wide range of control schemes for evaluating/tuning of the parameters of PID controllers in both time and frequency domain. An elaborated and detailed overview on control techniques of controller are given in [4, 5]. This research work proposes a novel method to evaluate the PI coefficients using symmetrical optimum criteria which reduces the drawbacks of Ziegler-Nichols method.

In electric drives, the main functions of closed loop control are to improve the steady state accuracy and to en-

Research Article

A Comparative Study on Crack-Healing Ability of Al₂O₃/SiC Structural Ceramic Composites Synthesized by Microwave Sintering and Conventional Electrical Sintering

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This study was conducted to assess and compare the crack-healing ability of conventional electrical sintered and microwave sintered Al₂O₃/x wt. % SiC (x = 5, 10, 15, and 20) structural ceramic composites. The crack-healing ability of both conventional electrical sintered and microwave sintered specimens was studied by introducing a crack of ~100 μm length by Vickers's indentation and conducting a heat treatment at 1200°C for dwell time of 1 h in air. The flexural or bending strength of sintered, cracked, and crack-healed specimens was determined by three-point bending test, and the phase variations by X-ray diffraction and SEM micrographs before and after crack-healing of both the sintering methods were studied and compared. The results show that almost all the specimens recovered their strength after crack-healing, but the strength of microwave sintered Al₂O₃/SiC structural ceramic composites has been shown to be better than that of conventional electrical sintered Al₂O₃/SiC structural ceramic composites. The microwave sintered crack-healed Al₂O₃/10 wt. % SiC specimen shows higher flexural strength of 794 MPa, which was 105% when compared with conventional electrical sintered Al₂O₃/10 wt. % SiC and crack-healed Al₂O₃/10 wt. % SiC specimen. It was found by X-ray diffractogram that before crack-healing, all the conventional electrical sintered samples have SiO₂ phase which reduce the crack-healing ability and microwave sintered samples with 15 and 20 wt. % SiC show lesser SiO₂ phase and 5 and 10 wt. % SiC samples have no SiO₂ phase before crack-healing. However, after crack-healing treatment, all the samples have distinct SiO₂ phase along with Al₂O₃ and SiC phases. Microwave sintered Al₂O₃/10 wt. % SiC specimen cracks were fully healed which was evident in SEM micrographs.

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Abstract:

Binary and ternary blends of poly lactic acid (PLA), acrylonitrile-butadiene-styrene (ABS) and tapioca cassava starch (TCS) were prepared by the help of melt blend method. Rheological and mechanical properties of the prepared blends were studied. Rheological properties were studied using capillary Rheometer, shear rate, shear stress, the non-Newtonian index, were determined. Mechanical properties were studied in terms of tensile properties, stress at break, strain at break and Young's modulus have been determined by help of Universal Test Machine (UTM-3969). The results shows the ternary blends reveals shear-thinning behavior, over

the range of the studied shear rates where the true shear rate of the blend decreases while increasing the shear rate. It also found that the true viscosity of the blend decreases with increased ABS content.

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Research Article

Integrated simultaneous scheduling of machines, automated guided vehicles and tools in multi machine flexible manufacturing system using symbiotic organisms search algorithm

Dr. N. Sivarami Reddy  , Dr. D.V. Ramamurthy  Dr. M. Padma Lalitha

Dr. K. Prahlada Rao

Pages 317-339 | Received 18 Nov 2020, Accepted 02 Oct 2021, Published online 10 Oct 2021

Electrical Engineering Department, AITS,
Rajampet, AP, India

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ABSTRACT

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This paper deals with *machines, automated guided vehicles and tools simultaneous scheduling in multi-machine flexible manufacturing system considering jobs' transport times among machines to minimize makespan. Only one copy of every tool type is made available due to economic restrictions. The tools are stored in central tool*

In this article

Simultaneous Scheduling of Machines, Tool Transporter and Tools in a Multi Machine Flexible Manufacturing System Without Tool Delay Using Crow Search Algorithm

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Abstract

This paper deals with machines, tool transporter (TT) and tools simultaneous scheduling in multi machine flexible manufacturing system (FMS) with the lowest possible number of copies of every tool type without tool delay taking into account tool transfer times to minimize makespan (MSN). The tools are stored in a central tool magazine (CTM) that shares with and serves for several machines. The problem is to determine the lowest possible number of copies of every tool variety, allocation of copies of tools to job-operations, job-operations' sequencing on machines and corresponding trip operations of TT, including the dead heading trip and loaded trip times of TT without tool delay for MSN minimization. This paper proposes nonlinear mixed integer programming (MIP) formulation to model this simultaneous scheduling problem and crow search algorithm (CSA) built on the crows' intelligent behavior to solve this problem. The results have been tabulated, analyzed and compared.

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Keywords: Scheduling of machines, tool transporter and tools; FMS; no tool delay; crow search algorithm; makespan; optimization techniques.

1. Introduction

Manufacturing companies are expected to handle growing product complexities, shorter market time, new technologies, global competition threats, and quickly changing situation. FMS is setup to deal with manufacturing competition. FMS is an integrated production system consisting of multipurpose machine tools which are computer numerical controlled (CNC), linked to an automated material handling system (MHS) [1]. FMS aims to be flexible in manufacture without undermining the product quality. The flexibility of the FMS relies on the flexibilities of CNC machines, automated MHS, and control software. FMSs have been categorized into distinct kinds as per their workflow patterns, size, or manufacturing type. Four kinds of FMS are described from the planning and control point of perspective: single flexible machines (SFM), flexible manufacturing cells (FMC), multi-machine FMS (MMFMS), and multi-cell FMS (MCFMS) [2]. Advantages, such as reductions in cost, enhanced utilizations, decreased work-in-process, etc have already been proved by existing FMS implementations [3]. Use of resources is improved by scheduling tasks so as to reduce the MSN [4]. One way to achieve high productivity in

FMS is to solve scheduling problems optimally or near optimally.

Tool loading is a complicating issue in scheduling problems since the number of tool copies are limited and may be smaller than the number of machines due to economic restrictions. Job and tool scheduling is an important problem for production systems. Inefficient planning of job scheduling and tool loading may lead to under utilization of capital intensive machines, and high level of machine idle time [5]. Therefore, efficient scheduling of jobs and the tools enables a manufacturing system to increase machines' utilization and decrease their idle times. There are a number of studies on the machines and tools scheduling. Tang and Denardo [6] solved the problem of determining job sequence and tools which are placed before every job is processed on machine for minimization of tool switches. Chandra et al [7] proposed a practical approach for deciding the sequence of jobs and tools for minimization of the total set up and processing times to make sure that jobs are completed before their delivery dates. Song et al [8] mentioned heuristic algorithm for allocating tools and parts for minimization of tool switches between machines where every part needs to visit only one machine for its complete processing. Roh and Kim [9] examined allotment of part and tool, and scheduling issues for entire tardiness minimization under

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**AN INVESTIGATION ON VERTICAL POROUS PLATE IN A
CONDUCTING FLUID WITH MULTIPLE BOUNDARY
LAYER FLOW OF CASSON FLUID**

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(Received: Nov. 06, 2020 Accepted: Sep. 22, 2021 Published: Dec. 30, 2021)

Abstract: The present investigation generates an analytical solution of multiple boundary layer flow of Casson fluid past over a vertical plate through porous medium in a conducting fluid in the presence of a uniform transverse magnetic field. In this investigation the effects of radiation, heat generation/absorption, radiation absorption and homogeneous chemical reaction are considered. The coupled nonlinear partial equations are turned to ordinary equations by super imposing solutions with steady and time dependent transient part. Finally, the set of ordinary differential equations are solved with a perturbation method to meet the inadequacy of boundary condition. The effect of different parameters on the flow is described with the help of graphs and tables. The most interesting observation found from this investigation is the fluctuation of velocity appears near the plate due to the presence of sink and presences of elastic element as well heat source reduce the skin friction.

Keywords and Phrases: Casson fluid, Porous plate, Thermal radiation, Chemical reaction, Heat and mass transfer, Radiation absorption.

Parametric Optimization of Wire Cut EDM Process on 'AISID3 Steel' using Genetic Algorithm and Grey Relation Analysis

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Abstract:- The manufacturing industries are continuously seeking for new and better machining operations in order to achieve the desired profile or contour of their machining parts. In view of this requirement, at present we focused on Wire Electrical Discharge Machining process. The Wire Electric Discharge Machining (WEDM) is a non-traditional process of material from conductive material to produce parts with intricate shape and profiles. Machine trade has created exponential growth in its producing capabilities in last decade however still machine tools don't seem to be used at their full potential. within the gift work, a trial has been created to optimize the machining conditions for surface roughness supported (L9 Orthogonal Array) Taguchi methodology. Experiments were carried out under varying pulse-on-time, pulse-off-time, servo control, and wire feed. An orthogonal array, the genetic algorithm (GA) and grey relational analysis (GRA) were employed to the study the surface roughness in the WEDM of AISI D3 Steel. It was determined that the discharge current was the foremost prestigious factors on the surface roughness. To validate the study, confirmation experiment has been dispensed at optimum set of parameters and expected results are found to be in sensible agreement with experimental findings.

Key words: WEDM, Surface roughness, Discharge current, Genetic Algorithm, Grey Relation Analysis

I. INTRODUCTION

Need for Unconventional Machining Processes was extremely hard and brittle materials or Difficult to machine material are difficult to Machine by traditional machining processes. once the work piece is simply too versatile or slender to support the cutting or grinding forces once the form of the half is simply too complicated. many sorts of non-traditional machining processes are developed to fulfill additional needed machining conditions. once these processes square measure used properly, they provide several blessings over non-traditional machining processes. The wire EDM is one of the vital non-conventional machining techniques. The effect of process parameters on the quality of machining especially surface roughness is much more crucial. Brajesh Kumar Lodhi et.al.[1] studied on optimization of the machining conditions for surface roughness based on (L9 Orthogonal Array) Taguchi methodology. Experiments were distributed below variable pulse-on-time, pulse-off-time, peak current, and wire feed. Jyosha Joshi et.al.[2] Investigated on optimizing the machining parameter of wire electrical discharge machining

(WEDM) for multiple performance characteristics on D3 tool steel using principal component analysis (PCA). Shivade et.al.[3] performed wire discharge machining of D3 alloy steel and Influence of pulse-on time, pulse-off time, peak current and wire speed square measure investigated for MRR, dimensional deviation, gap current and machining time, throughout convoluted machining of D3 alloy steel. Pankaj et.al.[4] are studied the effect of various process parameters such as pulse on time, pulse off time and current for high carbon high chromium cold work tool steel (D2). The experiment has been completed with the help of Design of experiment by Taguchi method is applied to create an orthogonal array of input variables using the ANOVA. M. Siva Kumar et.al.[5] Optimum machining parameter for the wire electrical discharge machining of AISI D3 steel of two different thickness (50mm & 75mm). Omkar Kulkarni et.al.[6] The experimentation has been completed with the help of Taguchi's L25 Orthogonal Array. Grey Wolf Optimizer (GWO) algorithm is stimulated by grey wolves. Mangesh et.al.[7] Performed CNC wire electrical discharge machining (WEDM) of Al 2124 SiCp Metal Matrix Composite (MMC) is analyzed by using dimensional analysis approach (DA) and artificial neural network (ANN). The various investigations [8-12] are carried out on the optimizations of process parameters by using grey analysis and genetic algorithms. Pratik A. Patil et.al.[13] investigated effect of parameter on machining of AISI D2 cold work steel through wire cut EDM. This research deals with Response Surface Methodology approach for maximizing the material removal rate in wire electrical discharge machining. M. Durairaj et.al.[14] investigated effect of parameter on machining of SS304 through wire cut EDM. Amitesh Goswami et.al.[15] Analysis trim cut machining and surface integrity of Nimonic 80A alloy using wire cut EDM with three levels of input parameters. Somvir Singh Nain et.al.[16] Modeling and optimization of process variables of wire-cut electric discharge machining of super alloy Udimet-L605. In this paper, an attempt is made to investigate the influence of WEDM process parameters on the performance measures of surface finish and cutting speed while machining of AISID3 STEEL with three levels of process parameters Pulse-on time, Pulse-off time, Wire feed & servo control.



MHD JEFFREY FLUID FLOW PAST A VERTICAL PLATE WITH UNIFORM BOUNDARIES

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Keywords and phrases: Jeffrey fluid, porous medium, heat source parameter, magnetic parameter, chemical reaction, radiation absorption, heat and mass transfer.

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Thermal and Mechanical Properties of PLA/ABS/TCS Polymer Blend Composites

Original Contribution Published: 19 April 2021

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B. Ramanjaneyulu , **N. Venkatachalapathi** & **G. Prasanthi**

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Abstract

In this study, polylactic acid (PLA) and acrylonitrile–butadiene–styrene (ABS) are, respectively, blended in 70/30, 50/50 and 30/70 ratios to form polymer blends, and tapioca cassava starch (TCS) is added at concentrations of 10, 15 and 20% to form PLA/ABS/TCS blend combinations, respectively. Thermal (DSC and TGA), morphological and tensile properties of these composite were investigated. PLA/ABS and PLA/ABS/TCS blends are miscible as indicated by single melting peaks in the DSC. The DSC results reveal that the TCS is primarily concentrated in the PLA phase of the PLA/ABS blends. TGA results show that the PLA/ABS blends are more thermal stable than the pure PLA polymer. The

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An optimized complex motion prediction approach based on a video synopsis

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[International Journal of Intelligent Unmanned Systems](#)

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Abstract

Purpose

The space-time variants algorithm will not give good results in practical scenarios; when no tubes increase, these techniques will not give the results. It is challenging to reduce the energy of the output synopsis videos. In this paper, a new optimized technique has been implemented that models and covers every frame in the output video.

Design/methodology/approach

In the video synopsis, condensing a video to produce a low frame rate (FR) video using their spatial and temporal coefficients is vital in complex environments. Maintaining a database is also feasible and consumes space. In recent years, many algorithms were proposed.

Findings

The main advantage of this proposed technique is that the output frames are selected by the user definitions and stored in low-intensity communication systems and also it gives tremendous support to the user to select desired tubes and thereby stops the criterion in the output video, which can be further suitable for the user's knowledge and creates nonoverlapping tube-oriented synopsis that can provide excellent visual experience.

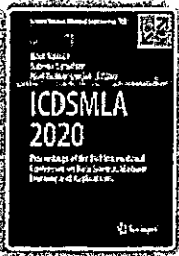
Research limitations/implications

In this research paper, four test videos are utilized with complex environments (high-density objects) and show that the proposed technique gives better results when compared to other existing techniques.

Originality/value

The proposed method provides a unique technique in video synopsis for compressing the data without loss.

Keywords



[ICDSMLA 2020](#) pp 1429–1435

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Recursive Least Squares Linear Equalizer for Spectral Efficiency Enhancement in Green Radio Communications

[C. H. Nagaraju](#) & [Bharath Naga Raju](#)

Conference paper | [First Online: 09 November 2021](#)

1032 Accesses

Part of the [Lecture Notes in Electrical Engineering](#) book series (LNEE, volume 783)

Abstract

In this paper, a recursive least squares linear equalizer is used for receiving the data with less errors. In this process the data is modulated using the compressive sensing based index modulation in order to increase the spectral efficiency. This process reduces the BER and PAPR than the existing methods. This method can be mainly used in the green radio communications. This equalizes the data obtained at the receiver side. This recursive equalized based sparse index modulation can be used to reduce the noise in the receiver side. The results have been investigated using MATLAB Tool with the required number of tool boxes and blocksets.



Histogram Equalized Thresholding method for analysis of Diabetic Myonecrosis related images

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Abstract

Diabetes Mellitus has become a common disorder in all groups of people throughout the world in the current days, mainly because of sedentary lifestyles and abnormal eating habits. Moreover, it has become a threat as well as a challenge to the researchers in the scientific society to find a solution to control this problem. Even though there is no proven cure for this disorder, one can lead a normal life with knowledge and awareness of issues related to diabetes. The main issue of concern for people with diabetes is its related complications, especially Myonecrosis. Diabetic myonecrosis is a rare complication of diabetes mellitus that has been poorly addressed. The disease presents itself in a human as lower extremity acute non-traumatic swelling and pain that can imitate deep vein thrombosis (DVT). Usually, the medical condition is self-limiting, and patients react well to therapeutic treatment that supports them. Together with other microvascular complications such as retinopathy, nephropathy, or neuropathy, it often develops into further complications. These complications are more common among Type I diabetics but can also arise in patients with Type II diabetes. Current image processing methodologies hold a significant position in removing specific challenges related to medical imaging technologies. The research work dealt with in this paper is about the problem in various conditions of Diabetic Myonecrosis, and the outcome results are used for analysis of the problem in various conditions of DM patient with Myonecrosis. Threshold segmentation methods are used to extract the features, and several attributes have been derived for statistical comparison in this work. The tools used for investigation in this work are MATLAB Technical computing language for simulation results and MIPAV for deriving statistical parameters.

Keywords: *Diabetes Mellitus; Diabetic Myonecrosis; Disorder; Enhancement; Thresholding.*


Introduction

Diabetes Mellitus (DM)

DM is considered to be a very significant human health threat, as well as a substantial socio-economic weigh-down on governments. According to statistics from the International Diabetes Federation (IDF), the approximate global occurrence of DM had reached 8.8% in 2015 and 12% of global health spending in the same year was to address DM. Diabetic Mellitus (DM) is a metabolic disorder that does not control the concentration of blood glucose in the pancreas. The ailment can lead to blood glucose levels being out of range [2]. In other words, Diabetes mellitus can be described as a persistent ailment that is caused by an innate and acquired dearth in the production of insulin by the pancreas, or by the futility of the insulin formed. Such a shortage results in increased concentrations of glucose in the blood, which in turn harm different part of the body's systems, by stressing out the blood vessels and nerves.



A Dynamic Hybrid Decoder Approach Using EG-LDPC Codes for Signal Processing Applications

J. Chinna Babu¹ · Nuka Mallikharjuna Rao² · Kadiyala Ramana² · Vidhyacharan Bhaskar³ 

Accepted: 9 August 2021

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Abstract

The Low-Density Parity Check (LDPC) codes of Euclidean Geometry (EG) are encrypted and decrypted in numerous ways, namely Soft Bit Flipping (SBF), Sequential Peeling Decoder (SPD), Belief Propagation Decoder (BPD), Majority Logic Decoder/Detector (MLDD), and Parallel Peeling Decoder (PPD) decoding algorithms. These algorithms provide a extensive range of trade-offs between latency decoding, power consumption, hardware complexity-required resources, and error rate performance. Therefore, the problem is to communicate a sophisticated technique specifying the both soft and burst errors for effective information transmission. In this research, projected a technique named as Hybrid SBF (HSBF) decoder for EG-LDPC codes, which reduces the decoding complexity and maximizes the signal transmission and reception. In this paper, HSBF is also known as Self Reliability based Weighted Soft Bit Flipping (SRWSBF) Decoder. It is obvious from the outcomes that the proposed technique is better than the decoding algorithms SBF, MLDD, BPD, SPD and PPD. Using Xilinx synthesis and SPARTAN 3e, a simulation model is designed to investigate latency, hardware utilization and power consumption. Average latency of 16.65 percent is found to be reduced. It is observed that in considered synthesis parameters such as number of 4-input LUTs, number of slices, and number of bonded IOBs, excluding number of slice Flip-Flops, hardware utilization is minimized to an average of 4.25 percent. The number of slices Flip-Flops resource use in the proposed HSBF decoding algorithm is slightly higher than other decoding algorithms, i.e. 1.85%. It is noted that, over the decoding algorithms considered in this study, the proposed research study minimizes power consumption by an average of 41.68%. These algorithms are used in multimedia applications, processing systems for security and information.

Keywords Low Density Parity Check (LDPC) · EG-LDPC · Soft errors · Burst errors · Decoding algorithm · HSBF (SRWSBF) · Multimedia applications · Security

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RNN-based multispectral satellite image processing for remote sensing applications

Multispectral satellite image processing

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Abstract

Purpose – Image classification is a fundamental form of digital image processing in which pixels are labeled into one of the object classes present in the image. Multispectral image classification is a challenging task due to complexities associated with the images captured by satellites. Accurate image classification is highly essential in remote sensing applications. However, existing machine learning and deep learning-based classification methods could not provide desired accuracy. The purpose of this paper is to classify the objects in the satellite image with greater accuracy.

Design/methodology/approach – This paper proposes a deep learning-based automated method for classifying multispectral images. The central issue of this work is that data sets collected from public databases are first divided into a number of patches and their features are extracted. The features extracted from patches are then concatenated before a classification method is used to classify the objects in the image.

Findings – The performance of proposed modified velocity-based colliding bodies optimization method is compared with existing methods in terms of type-1 measures such as sensitivity, specificity, accuracy, net present value, F1 Score and Matthews correlation coefficient and type 2 measures such as false discovery rate and false positive rate. The statistical results obtained from the proposed method show better performance than existing methods.

Originality/value – In this work, multispectral image classification accuracy is improved with an optimization algorithm called modified velocity-based colliding bodies optimization.

Keywords Optimization techniques, Deep learning, Recurrent neural network, Image classification, Image feature extraction, Multispectral images

Paper type Research paper

1. Introduction

Remote sensing is the process of capturing images of earth objects without physically touching them. Satellite images are classified into three types: hyper, multi and super spectral images. These images are distinct from one another in both their spectral and spatial features. They contain 3 to 10 bands in multi-spectral images and 36 spectral bands are present in super-spectral images. The 3D cube of hyper-spectral images (HSI) has one spectral and two spatial dimensions. The classification of massive satellite imagery is needed for recognizing and representing land





Outcome-based education: a paramount model for higher educational institutions in India

N. Mallikharjuna Rao, Sasidhar Choragudi and J. Chinna Babu

Published Online: August 16, 2021 · pp 462-475 · <https://doi.org/10.1504/IJCELL.2021.118306>



ABOUT

Abstract

In the year 2014, India became a full member of the Washington Accord that facilitates for accreditation process in engineering education system with desired policies and procedures. It signifies that our accreditation process in the engineering institutions is in full conformity with the requirements of the Washington Accord with the outcome-based education. This study supports to determine the challenges in the present engineering education and discusses the outcome-based education implementation in engineering institutions. At the end, this study reviewed the assessment approaches.

Keywords

engineering education, National Board of Accreditation, NBA, Washington Accord, outcome-based education, OBE, graduate attributes

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Second Order Continuous Time Incremental Sigma-Delta Modulator Based Analog-To-Digital Converter

P. Brundavani, Dr. D. Vishnu Vardhan

ABSTRACT

Novel VLSI system design has shown vital role in wide variety of neural recording network models. In the front end, an analog-to-digital converter (ADC) is a major block in neural recording system. The speed and resolution of ADC are affecting the neural recording process while acquiring neuro potentials. The power consumed with ADC block is higher compared to other blocks. This paper suggests second order continuous time incremental sigma-delta (CTI $\Sigma\Delta$) analog-to-digital converter for neural recording applications, which has low power consumption and high resolution as well as faster conversion time. The sigma-delta modulation is achieved by using a dynamic summing comparator, which reduces the signal swing by incorporating cascaded integrators in forward path. However, performance degradation is expected to increase, which is overcome with adjustment of coefficients. The proposed structure is designed in 180nm CMOS process and simulated for transient and power analyses

HOW TO CITE

P. Brundavani, Dr. D. Vishnu Vardhan. (2021). Second Order Continuous Time Incremental Sigma-Delta Modulator Based Analog-To-Digital Converter. *Design Engineering*, 1013 - 1024. Retrieved from <http://www.thedesignengineering.com/index.php/DE/article/view/1639>

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A Dual Channel OTA with Adaptive Reference Control Module and Current Mirror for Biomedical Applications

Ernest Ravindran R. S, Sudhakiran Gunda, Pampana Mitra Sai, Munagala Bindu Madhavi, Kilamsetty Praneeth, S Vamsee Krishna

Keywords: ECG (electrocardiography), Cardiac rhythm, cardiovascular diseases, Operational Transconductance Amplifier (OTA), current mirror.

ABSTRACT

The Wearable and implantable ECG (electrocardiography) monitors, such as cardiac rhythm and heart failure, are commonly used to monitor individual's heart condition for early detection of cardiovascular diseases. In terms of power, noise and linearity, an ECG sensor is one of the most critical elements. A low noise and low power feedback amplifier based on a current-reused Operational Transconductance Amplifier (OTA) and current mirror OTA that meets the stringent requirements of ECG recordings is present in the existing system. In the proposed system, design of OTA for ECG sensors is digitalized through threshold converters and current mirror OTA the various references is fetched to extract the unique points. A dual channel OTA is implemented here with an adaptive reference control module and current mirror approach. The proposed architecture is designed and simulated by using the Xilinx Modelsim (method 1) and Tanner tool (method 2). The proposed architectures focus on reduced power consumption and size of the circuit.



Performance investigation of spectral-efficient high-speed inter-satellite optical wireless communication link incorporating polarization division multiplexing

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Abstract

Space information transmission links are crucial for covering the entire globe for communication purposes. The traditional microwave frequency-based satellite communication links have high latency and low information transmission rates. In the last few years, inter-satellite optical wireless communication (IsOWC) technology has evolved significantly as a result of its numerous benefits like wide channel bandwidth, high-speed links, and low mass and power requirements. Different research groups have proposed IsOWC links based on conventional on-off modulation schemes for transmitting 10 Gbps data between satellites separated in space. But the future generation transmission links require higher spectral efficiency and data rates with longer transmission reach. In this research, a novel single-channel spectrum-efficient 160 Gbps polarization division multiplexing-based IsOWC link is investigated for long communication range transmission. In this design, coherent detection technique is employed to mitigate the effects of system errors and space turbulence (i.e. pointing errors). A digital signal processing module has been proposed for minimizing the information signal degradation due to space turbulences and to estimate the carrier phase of the signal received. The results show that 160 Gbps information is successfully transmitted over 20,000 km range with an acceptable bit error rate (BER). Also, the influence of different system parameters including pointing error angle, receiver aperture diameter, and additional losses on the signal BER is numerically investigated.

Keywords PDM · IsOWC · Space turbulences · Range · DSP

1 Introduction

Laser technology implementation was first developed for space communication in 1962 (Koeppf et al. 2002). In the last five decades, scientists, private companies, universities, and government agencies have achieved monumental technical advancements in space

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An Organized Approach for Analysis of Diabetic Nephropathy Images Using Watershed and Contrast Adaptive Thresholding



Syed Musthak Ahmed, Fahimuddin Shaik, Vinit Kumar Gunjan,
and Mohammed Yasin Ali

Abstract The main origin of enduring kidney disease and a significant source of coronary mortality is diabetic nephropathy. Diabetic Nephropathy was divided into phases: micro albuminuria and macro albuminuria. Nephropathy is characterized pathologically by thickening of glomerular and tubular basal membranes in persons with type diabetes, with gradual mesangial extension (diffuse or nodular) contributing to gradual reduction of glomerular filtration surface. It raises the risk of death, primarily from cardiovascular causes, and in the absence of other renal disorders, it is characterized by increased urinary albumin excretion (UAE). A new algorithm is proposed in this work to examine the fundamental problems present in acquired Diabetic Nephropathy images. Through integrating these two approaches, a pre-processing technique such as (Contrast Enhancement; CLAHE) as well as post-processing technique such as (Cell Detection) segmentation provides an integrated worldview of picture handling techniques that is utilized to make the casing work and is helpful for basic translation just as an educational asset for the normal man. Investigating and exploring the significance of less broadly utilized estimation parameters in clinical picture examination stage is acted in this examination.

Keywords Diabetic nephropathy · Diabetic mellitus · Cardiovascular mortality

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A Literature Survey on Identification of Asthma Using Different Classifier and Clustering Techniques

Modern Approaches in Machine Learning and Cognitive Science: A Walkthrough pp 69-80 | Cite as

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- Fahimuddin Shaik (2)
- Vinit Kumar Gunjan (3)
- Mohammed Yasin Ali (4)

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Chapter

First Online: 27 April 2021

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Abstract

Asthma disease are the scatters, gives that influence the lungs, the organs that let us to inhale and it's the principal visit disease overall particularly in India. During this work, the matter of lung maladies simply like the trouble experienced while arranging the sickness in radiography are frequently illuminated. There are various procedures found in writing for recognition of asthma infection identification. A few agents have contributed their realities for Asthma illness expectation. The need for distinguishing asthma illness at a beginning period is very fundamental and is an exuberant research territory inside the field of clinical picture preparing. For this, we've survey numerous relapse models, k-implies bunching, various leveled calculation, characterizations and profound learning methods to search out best classifier for lung illness identification. These papers generally settlement about winning carcinoma discovery methods that are reachable inside the writing. The probability of endurance of patients with maladies is frequently made conceivable if the sickness is recognized and analyzed in perfect time. (SVM), (KNN) and vector machine, Random help in the recognition of lung mass. A numeral of procedures has been started in malignancy recognition strategies to advance the productivity of their identification. Different applications like as help vector machines, neural systems, picture preparing methods are widely used in for asthma illness recognition which is explained during this work.

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Simulation of Optimized Architecture for the Estimation of Congestion during Placement and Routing

Shaik Karimullah, Dr. D. Vishnuvardhan

ABSTRACT

This work presents backend estimation of design parameters for placement and routing flow with the help of existed Floorplan approach done by using Hybrid Optimization Algorithm to estimate the value of Congestion. Effective area utilization plays key role in VLSI Circuit design, wherein reduction of Congestion is also associated with it for the improvement of Floorplan, Placement and Routing. This improvement significantly helpful for compact design and performance of the circuit. Congestion is a fundamental key issue in Very Large Integration for estimating the density of area underlies with routing among various Computational blocks. Here we used ICC II simulation tool for simulation of Floorplanned area of Standard Benchmark Circuit for the betterment of placement. Prior approaches estimated the values of congestion for standard architectures whereas this work considered the Floorplan and Placement outputs of standard MCNCBM Circuit using IHS Algorithm which gave best results for placement and routing for VLSI circuits, and simulated it for the estimation of Congestion for the circuit design.

HOW TO CITE

Shaik Karimullah, Dr. D. Vishnuvardhan. (2021). Simulation of Optimized Architecture for the Estimation of Congestion during Placement and Routing. *Design Engineering*, 2021(3), 755 - 764. Retrieved from

An intelligent internet of things-based secure healthcare framework using blockchain technology with an optimal deep learning model

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Abstract

Today, the internet of things (IoT) is becoming more common and finds applications in several domains, especially in the healthcare sector. Due to the rising demands of IoT, a massive quantity of sensing data gets generated from diverse sensing devices. Artificial intelligence (AI) techniques are vital for providing a scalable and precise analysis of data in real time. But the design and development of a useful big data analysis technique face a few challenges, like centralized architecture, security, and privacy, resource constraints, and the lack of adequate training data. On the other hand, the rising blockchain technology offers a decentralized architecture. It enables secure sharing of data and resources to the different



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An IoT Based Smart Wearable Device for Women Safety

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Abstract

Women are subjected to an increasing amount of harassment these days, which is troubling. The situation is extremely serious in both developing and developed countries. As a result, it poses a serious threat to women's empowerment as well as a country's fiscal development. We are developing IoT software and an Android app to make women's movement safer in this project. By pressing the device's emergency button, women will receive immediate and comprehensive safety assistance. In the event of an incident, this system will monitor the user's location in real time and send it to a local police station and volunteer. This device will also provide the user with the location of the nearest safe zone. Furthermore, this interface can be used both online and offline. If the user does not have access to the internet, the computer can also be used to contact the nearest police station and volunteer assistance. Arduino uno, GPS, GSM, Bluetooth, and other components make up the system. The combination of both of these factors makes this product both inexpensive and simple to use.

Keywords: Women empowerment, IOT Software, Arduino UNO, GPS, GSM, Women safety.

1. Introduction

Acts of abuse and assault against women have increased in recent years. As the number of female workers in industries and other sectors of the commercial market grow, it is becoming increasingly necessary for females to work late and travel to distant and remote locations. However, in recent years, the exponential rise in attack and abuse against women has posed a threat to women's growth and development. It is necessary to establish a security solution that gives women a sense of security. Women are often stated to be immobilized in the aftermath of an assault. As a result, there is a need for a simpler safety solution that can be triggered as easily as pressing a button and can send warnings to the victim's immediate surroundings. This project focuses on a security

infrastructure that is specifically designed to ensure the security and safety of women. The aim of this study is to develop a portable safety device for women that includes the Sends an emergency alert to family and friends. S. A. More's investigation [1] addresses the use of temperature and pulse rate sensors to automatically identify the possibility of an emergency and alert family and friends through a mobile app. [2] explores how to use image processing to identify any potential danger and offers a variety of options to defend her. The authors of [3] created a system that used a PIC16F876A microcontroller and a SIM808 module with GPS, GSM, and GPRS support to alert friends and family when the emergency button is pressed. A framework based on facial features is built in [4]. A report is filed if the facial

Fully-connected Committee Machine (FCM) based Online Learning under Concept Drift

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Abstract

The term “drift” refers to unanticipated changes in the transmission of data in the primary distribution over time. Conceptual drift research entails developing methods and strategies for detecting, interpreting, and adapting to drift. Machine learning approaches can produce poor learning outcomes in the conceptual drift environment if drift is not addressed. Furthermore, due to developments in the concept of drift, revealing a method not mentioned in the literature, the concept of drift learning methodologies has been significantly systematic in recent years. We used a layered neural network framework to experiment with different scenarios of online learning under concept drift using a fully-connected committee machine (FCM). We conduct experiments in various scenarios using a layered neural network framework for online learning under concept drift. In neural layered networks, sigmoidal and ReLU activation functions are considered for learning regression. When the layered framework is trained from the input dynamic data stream, the regression scheme changes consciously in all scenarios. A fully-connected committee machine (FCM) is trained to perform the tasks described in online learning with M hidden units on dynamically generated inputs. In this method, we run Monte Carlo simulations with the same number of units on both sides, K and M , to define the dynamic advancement of intersections between several hidden units and the calculation of generalization error. This is applied to over-learnability as a method of over-forgetting, integrating weight decay, and examining its effects in the presence of concept drift.

Keywords: Online Learning, Fully-connected Committee Machine (FCM), Concept Drift, Dynamic data streams.

1. Introduction

Contemporary hypothetical studies show that the generalization and representation power of neural networks will increase as the depth of neural networks increases [2, 22]. But, dynamic data stream analysis remains unexplored in neural network environments.

PREDICTION OF STUDENTS' ACHIEVING RESULTS USING ML ALGORITHMS

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ABSTRACT

Taking under consideration the challenges and issues that area unit moon-faced by the modern academic method, it's thought-about to use trendy intelligent systems and algorithms to enhance the education and teaching levels in academic institutions. The article describes Associate in Nursing algorithmic rule of actions on machine learning using, decisive the scholar's success level and analyzing the obtained knowledge. This analysis may be with efficiency want to determine and find the fashionable academic problems, and individual and collective pupils sample options, implement the classification method and multivariate analysis of the info set. Results obtained from the algorithms usage, knowledge analysis area unit represented and incontestable. The main options, information and insights getting strategies from the dataset area unit determined. The applied methodology is kind of economical and is capable of assessing pupil's performance metrics. Predicting student's and pupil's characteristics will facilitate to section and divide them into completely different categories so it will permit pupils to develop communication, leadership, and self-management skills whereas finding out in school or university. The results show that performance metrics assessment is Associate in Nursing integral a part of trendy education method that's slightly crucial for its improvement and pupil's trends in education exploration.

KEYWORDS: Machine learning Intelligent systems processing

EDA Education trendy instructional system college instructional method

INTRODUCTION

The modern instructional system wants a brand new qualitative teaching and finding out arrangement model. For this, there's a necessity for associate degree economical info technology implementation within the scientific and academic sphere. an oversized range of knowledge have a significant impact on the varied processes formation in several areas of society. However, so as to learn from their usage, a necessity to form a selected automation data processing model is crucial. Machine learning is in a position to resolve a many instructional process tasks quickly, in particular: pupils/students clustering; their classification, based on bound options and on bound groups; success and its factors prediction; improvement of the tutorial method level; finding associate degree specific approach to each individual of instructional establishments, etc. this text discusses the machine learning usage to predict and model the success level on the idea of a sample of pupils, school graduates, finding factors that promote a precise pupil prosperity level, and regularity identification between student teams. the aim of the study is to determine the performance metrics, exploitation strategies of mathematical modeling, machine

An Efficient Web Scraping Method Using Web Pages Contained Additional Data

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ABSTRACT

Web scraping is a cycle of separating significant and fascinating content data from web pages. The vast majority of the current examinations focusing on this errand are for the most part about mechanized web information extraction. In the extraction measure, these investigations initially make a DOM tree and afterward access the fundamental information through this tree. The development interaction of this tree expands the time cost contingent upon the information design of the DOM Tree. In the current web scratching writing, it is seen that time proficiency is overlooked. This examination proposes a novel methodology, specifically UzunExt, which concentrates content rapidly utilizing the string strategies and extra data without making a DOM Tree. The string techniques comprise of the accompanying sequential steps: looking for a given example, at that point figuring the quantity of shutting HTML components for this example, lastly removing content for the example. In the creeping cycle, our methodology gathers the extra data, including the beginning situation for improving the looking through measure, the quantity of internal tag for improving the extraction cycle, and label reiteration for ending the extraction interaction. The string strategies for this novel methodology are around multiple times quicker than extricating with the DOM-based strategy. Also, utilizing these extra data improves extraction time by 2.35 occasions contrasted with utilizing as it were the string strategies. Moreover, this methodology can undoubtedly be adjusted to other DOM-based examinations/parsers in this assignment to upgrade their time efficiencies.

INDEX TERMS: Archive object model, calculation plan and investigation, Computational proficiency, web creeping and scratching

1. INTRODUCTION

A site page contains superfluous substance like menus, promotions, flags, footers, sitemaps and essential substance like title, outline, primary content, cost, and description as far as data that clients need. With the expansion of superfluous substance on the pages, it has become fundamental to dispose of superfluous substance and to extricate necessary content that can be utilized by the content preparing applications, for example, web indexes, question-noting frameworks, proposal frameworks, pattern discovery/checking, sentiment investigation, and online business market observing. Numerous examines [1] in this undertaking around deciding the extraction of the information/design consequently. In any case, the time effectiveness of this cycle isn't contemplated in these studies. Along these lines, this investigation manages the speed increase of the extraction measure as opposed to choosing the extraction design. What's more, this investigation presents a novel methodology, in particular UzunExt, which

An Opinion Analysis for Dragging of Item Reviews from Various Web Pages using ML Algorithms

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ABSTRACT

Estimation investigation is the computational errand of consequently figuring out what sentiments an author is communicated in text. Notion investigation is acquiring a lot of consideration as of late. It is frequently outlined as a paired differentiation, for example positive vs negative, however it can likewise be an all the more fin-grained, such as distinguishing the particular feeling a creator is communicating like dread, satisfaction or outrage. Universally, business ventures can use assessment extremity and assumption, subject recognition to acquire further comprehension of the drivers and the general degree. Subsequently, these bits of knowledge can progress cut through sight and improve client assistance in this way making a superior brand picture and giving a competitive edge. To extricate the substance from web based business site utilizing web scratching method. It will circle through then number of pages or so of remarks for every one of the items. In this work, online item audits are gathered utilizing web scratching method. The gathered online item audits are broke down utilizing assessment or notion investigation utilizing order models like KNN(K Nearest Neighbors), Support Vector Machine(SVM), Random Forest, CNN (Convolutional Neural Network) furthermore, proposed mixture SVM-CNN. Investigations for the grouping models are performed with promising results.

Keywords : Catch phrases: Web scratching, Sentiment examination, KNN, Random Forest, SVM, CNN

1. INTRODUCTION

Assessment is a mentality, thought or judgment provoked by feeling. Assessment examination which is otherwise called assessment mining alludes to the utilization of Natural Language Processing (NLP), text examination and computational etymology to distinguish and separate emotional data from the source materials. It means to decide them equality of an author with regard to a particular point or the in general context oriented extremity of a report [9]. The web is a creative spot concerning assessment data. From a client's point of view, individuals can post their own substance through different online media, like discussions, miniature web journals, or online informal communication locales. From a specialist's point of view, numerous web-based media locales discharge their application programming interfaces (APIs), provoking information assortment and examination by analysts and engineers [3]. Consequently, assumption examination appears to have a solid fundament with the help of massive online information. In any case, those sorts of online information have a few defects that possibly ruin the cycle of supposition examination. The principal blemish is that since individuals can uninhibitedly post their substance, the nature of their feelings can't been sure. For instance, rather than imparting subject related insights, online

Different Machine Learning Approaches for Predicting Students' Performance

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ABSTRACT

In today's world, due to the advancement of technology, predicting the students' performance is among the foremost helpful and essential analysis topics. Data processing is extraordinarily useful within the field of education, particularly for analyzing students' performance. It's an undeniable fact that predicting the students' performance has become a severe challenge as a result of the unbalanced datasets during this field, and there's not any comparison among totally different resampling ways. This paper tries to check numerous resampling techniques like Borderline SMOTE, Random Over Sampler, SMOTE, SMOTE-ENN, SVM-SMOTE, and SMOTE-Tomek to handle the unbalanced information drawback whereas predicting students' performance mistreatment two totally different datasets. Moreover, the distinction between multiclass and binary classification, and structures of the options are examined. To be able to check the performance of the resampling ways higher in solving the unbalanced drawback, this paper uses numerous machine learning classifiers together with Random Forest, K-Nearest-Neighbor, Artificial Neural Network, XG-boost, Support Vector Machine (Radial Basis Function), call Tree, provision Regression, and Naïve Thomas Bayes. Moreover, the Random hold-out and Shuffle 5-fold cross-validation ways are used as model validation techniques. The achieved results mistreatment different analysis metrics indicate that fewer numbers of categories and nominal options can lead models to better performance. Also, classifiers don't perform well with unbalanced information, thus resolution this drawback is necessary. The performance of classifiers is improved mistreatment balanced datasets. in addition, the results of the pregnancy test, that could be an applied mathematics significance check, ensure that the SVM-SMOTE is a lot of economical than the opposite resampling ways. Moreover, The Random Forest classifier has achieved the simplest result among all alternative models whereas mistreatment SVM-SMOTE as a resampling technique.

Index Terms: *Classification, data mining, educational data mining, imbalanced data problem, machine learning, resampling methods, statistical analysis.*



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APS)

Madapuri Rudra Kumar, Vinit Kumar Gunjan and Mohd Dilshad Ansari

Published Online: 23 Jun 2023



Abstract

Appraisal systems hold critical importance in organisational human resource management. The way HR departments have developed over the period to the recent trends of AI-based human resource management systems and practices reflect on the emerging importance of effective HRM. In this present work, one of the key functionalities of the HRM process, the Appraisal system, is focused upon. This work presents a comprehensive model of appraisal system that relies on the machine learning solution for predicting evaluating the appraisal score. The developed model is trained with SVM classifier and is tested with 600+ records for evaluation. The precision and recall values indicated by the test results reflect that the model is potential and if more effectively pursued in terms of training and incorporating more in-depth analysis, the model can be a sustainable solution for human resource appraisal system.

Keywords

machine learning-based appraisal system, ML-APS, 360-degree performance system analysis

ACCESS OPTIONS

Hand Gesture based Sign Language Recognition System

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Abstract: One of the significant disadvantages of our general public is the boundary between incapacitated or impeded people and ordinary individuals. Correspondence is the solitary medium by which we can share our musings or pass on the message however for an individual with hard of hearing and unable to speak will face trouble in correspondence with an ordinary individual. For some, hard of hearing and unable to speak individuals, gesture-based communication is essential for correspondence. Gesture-based communication acknowledgment intends to naturally decipher gesture-based communications by a PC to assist the hard of hearing with imparting hearing society advantageously. Our point is to plan a framework to help the individual who prepared the meeting disabled to speak with the remainder of the world utilizing communication through signing or hand motion acknowledgment methods. In this framework, include recognition and highlight extraction of hand motion is finished with the assistance of SVM and OpenCV.

Keywords: Sign language, Hand Gesture, SVM, OpenCV, Machine Learning

1. INTRODUCTION

Picture handling is a rapidly developing region in a variety of applications, for example, interactive media programming, information correspondence, biomedicine, biometrics, remote sensing, surface setting, design acknowledgment, material-based retrieval, pressure, and many more. This is about how a computer can detect pictorial information after preparing a picture. Signs that people naturally make when talking to each other include very interesting pointing movements for correspondence and are perhaps the most institutionalized interface for choice. They open up the opportunity to display items and fields naturally, e.g., do a robot transfer movement course or just print some article. This is especially valuable in the mix with discourse acknowledgment as punctuation marks can be used to indicate the boundaries of the area in oral explanations. This innovation can help people with disabilities who are unable to speak. Similarly assuming that the individual has an unexpected language compared to a collector, in addition, it is usually used as an interpreter. It has always been viewed as a test of promoting a characteristic interface of cooperation, where individuals combine with innovation as they are used to collaborate with this current reality. A hands-free interface, in the face of human movements, where no device is connected to the client, will usually move the client from this current reality to the virtual climate.

It gives you the ones that use human organs to control the actual items. To get this explanation, individuals often use their hands to transmit and connect machines. The original Production for the computer is the mouse and keyboard and you need to use a booth with these widgets. The date of significant and rapid operation generally between man and machine is by visual and real guidance, but this is uneven. Overlay PCs of this age People with 1024 * 768 pixels at a 15-second horse rim rate and contrast with a decent typewriter Compose 60 words singing with a normal time word horse with 6 letters. To help this tracker cure many mice, however, this is restricted. Although most hands are typically used for related day-to-day control firms, occasionally not used in addition for correspondence. Hand movements that support us in our daily correspondence convey messages. Hands are usually important for vanilla and hearing loss, Verity relies on its hands and movements to express, the user's hand movements are crucial for correspondence in gesture-based communication. For a computer capable of interpreting and understanding hand movements, it was a step forward in the field of

Research Article

A New Hybrid Deep Learning Algorithm for Prediction of Wide Traffic Congestion in Smart Cities

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The vehicular adhoc network (VANET) is an emerging research topic in the intelligent transportation system that furnishes essential information to the vehicles in the network. Nearly 150 thousand people are affected by the road accidents that must be minimized, and improving safety is required in VANET. The prediction of traffic congestions plays a momentous role in minimizing accidents in roads and improving traffic management for people. However, the dynamic behavior of the vehicles in the network degrades the rendition of deep learning models in predicting the traffic congestion on roads. To overcome the congestion problem, this paper proposes a new hybrid boosted long short-term memory ensemble (BLSTME) and convolutional neural network (CNN) model that ensemble the powerful features of CNN with BLSTME to negotiate the dynamic behavior of the vehicle and to predict the congestion in traffic effectively on roads. The CNN extracts the features from traffic images, and the proposed BLSTME trains and strengthens the weak classifiers for the prediction of congestion. The proposed model is developed using Tensor flow python libraries and are tested in real traffic scenario simulated using SUMO and OMNeT++. The extensive experimentations are carried out, and the model is measured with the performance metrics likely prediction accuracy, precision, and recall. Thus, the experimental result shows 98% of accuracy, 96% of precision, and 94% of recall. The results compiles that the proposed model clobbers the other existing algorithms by furnishing 10% higher than deep learning models in terms of stability and performance.

1. Introduction

The vehicular adhoc network is one among the puissant research applications in the intelligent transportation system (ITS) that furnishes the information to prevent or reduce the traffic congestion. For exchanging the information in a network, the vehicular adhoc network has vehicle-to-vehicle (V2V) and vehicle-to-infrastructure (V2I) communication. When a conveyance directly communicates with other con-

veyance in a network is V2V communication and when a conveyance directly communicates with roadside units (RSU), then, it is V2I communication [1]. The momentous standards of VANET are the dedicated short-range communication (DSRC) protocol, IEEE 802.11 [2], and wireless access in vehicular environment (WAVE) [3, 4]. Delays due to traffic, traffic that leads to congestion, consumption of energy, and the emission of pollution are the disputable in traffic management for smart cities [5–9]. The traffic

Fully-connected Committee Machine (FCM) based Online Learning under Concept Drift

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Abstract

The term “drift” refers to unanticipated changes in the transmission of data in the primary distribution over time. Conceptual drift research entails developing methods and strategies for detecting, interpreting, and adapting to drift. Machine learning approaches can produce poor learning outcomes in the conceptual drift environment if drift is not addressed. Furthermore, due to developments in the concept of drift, revealing a method not mentioned in the literature, the concept of drift learning methodologies has been significantly systematic in recent years. We used a layered neural network framework to experiment with different scenarios of online learning under concept drift using a fully-connected committee machine (FCM). We conduct experiments in various scenarios using a layered neural network framework for online learning under concept drift. In neural layered networks, sigmoidal and ReLU activation functions are considered for learning regression. When the layered framework is trained from the input dynamic data stream, the regression scheme changes consciously in all scenarios. A fully-connected committee machine (FCM) is trained to perform the tasks described in online learning with M hidden units on dynamically generated inputs. In this method, we run Monte Carlo simulations with the same number of units on both sides, K and M , to define the dynamic advancement of intersections between several hidden units and the calculation of generalization error. This is applied to over-learnability as a method of over-forgetting, integrating weight decay, and examining its effects in the presence of concept drift.

Keywords: Online Learning, Fully-connected Committee Machine (FCM), Concept Drift, Dynamic data streams.

1. Introduction

Contemporary hypothetic studies show that the generalization and representation power of neural networks will increase as the depth of neural networks increases [2, 22]. But, dynamic data stream analysis remains unexplored in neural network environments.

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Parametric Analysis of Texture Classification Using Modified Weighted Probabilistic Neural Network (MWPNN)

Chapter | First Online: 27 April 2021

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Abstract

Texture classification is one of the sort-out methods in pattern recognition. In this research work, a novel proposal called Modified Weighted Probabilistic Neural Network (MWPNN), which can be used to classify the textures, is proposed. It outperforms the previous method by adding inherent capabilities with respect to the weighing characteristic. The weights are modified with help of the Sensitivity Analysis (SA) Method. This MWPNN includes the Self-Organizing Maps of the Neural Network (SOM) and including weighting factors extracted from a supervised labelling process. The proposed approach is tested on sample textures and the results obtained are compared to the Probabilistic Neural Network (PNN) and the Weighted Probabilistic Neural Network (WPNN) with bench mark machine learning algorithms such as Naïve Bayes Classifier and Multi-Layer Perceptron. The efficiency of this method is compared to Mean, Standard Deviation, Mean Square Error (MSE) and Peak Signal to Noise Ratio (PSNR). The entire simulation is carried out using MATLAB computing tool with the help of Image Processing and ANN toolboxes along with required auxiliary functions and blocksets.

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Drugs and Cell Therapies in Hematology

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Home / Archives / Vol. 10 No. 2 (2021) / Articles

Identification and Classification of Pneumonia in Chest X-Ray Images Using Deep Learning Techniques

Dr. P. Phanindra Kumar Reddy, Y. Vaishnavi, V. Sravani, G. Vikas Babu, P. Yashwanth Reddy

🔒 PDF

Published
2021-08-01

Abstract

Pneumonia is a bacterial or viral respiratory infection that affects a huge number of individuals, particularly in developing and disadvantaged countries where pollution, poor living conditions, congestion, and a lack of medical infrastructure are all too frequent. Pneumonia produces pleural effusion, which is a condition in which fluids fill the lung and create

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www.dcth.org/index.php/journal/index problems. It is critical to diagnose pneumonia early in order to

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Drugs and Cell Therapies in Hematology

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Canny Edge Detection Algorithm for Consistency Based Smart Traffic Signal in a Smart City

Dr. P. Phanindra Kumar Reddy, P. Guru Kavya Sree, P. Jyothsna, S. Ganga Prasad, G. Mahesh

PDF

Published
2021-08-01

Abstract

The urban areas of the country are filled with a large number of vehicles, traffic congestion has become a major problem. As the problem of traffic congestion in the city escalates, it becomes more and more necessary to find a new solution using emerging technology. An effective traffic management system must take into account changes in traffic density at different times of the day. For this, the traffic control system must become

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Comparison of performance of a position-based routing protocol for: VANET

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ABSTRACT

VANET is an application of an ad hoc mobile network for communication between vehicles. Each vehicle knows its position information by GPS or other methods. Position-based routing is a useful approach in VANET. The position-based routing protocol can be roughly divided into a forward hop transfer method and a directed flood method. We evaluate the performance of both methods by analysis and simulation is compared..

1. Introduction

A mobile ad hoc network (MANET) has received much attention for the development of computer technology and wireless communication. MANET does not depend on a specific infrastructure, behaves autonomously and performs multi-hop communication. One of MANET's most promising applications is a vehicle-to-vehicle communication system. This system is called a Vehicle Ad Hoc Network (VANET). Much research has been carried out on VANET for driver assistance services, traffic information services, and user communication and information services [1] [2].

Routing protocols for MANET are divided into two types: topology-based routing and position-based (geographic) routing. The Internet Engineering Task Force (IETF) MANET is currently working on the standardization of the topology-based routing protocol [3] [4]. On the other hand, the proliferation of car navigation systems using GPS is remarkable, and it seems that VANET can perform efficient communication using position information. A routing protocol that uses position information is called position-based routing. Compared to topology-based routing, it can:

mitigate scalability issues or control message overload. Several position-based routing approaches have been proposed [5] - [8]. These can be broadly classified into two categories. One is called the Next-Hop Forwarding method and the other is the Directed Flooding method [9]. Each method has been previously proposed and evaluated independently, but they have not been compared at all, although they have different

characteristics and we had to choose one depending on the environment.

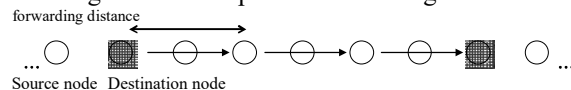
In this article, we evaluate and compare the two methods through an analytical approach and clarify the difference between them. We also run the simulation and evaluate their performance in a real situation.

The rest of the paper is organized as follows. Chapter 2 summarizes position-based routing. Chapter 3 analyzes the two position-based routing methods analytically. Numerical examples are presented in section 4. This document ends in section 5.

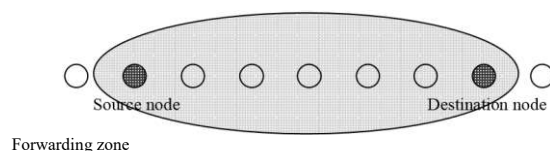
2. Related Work

The concept of position-based routing is illustrated in Figure 1. It can be classified into a next hop transfer method and a directed flood method. In both methods, a source node must know the positional information of itself and the destination node.

The next-hop transfer method is a method of transferring a packet to the selected next-hop node by unicast [5] [6]. This method determines the next hop node from the position information of the sender, its neighbor nodes, and the destination node. To know the position information of neighboring nodes, each node exchanges a hello packet containing its node_{Maximum forwarding distance}



(a) Next-Hop Forwarding method.



Forwarding zone

.....

(b) Directed Flooding method.

Figure 1: Position-Based Routing.

Improving Cloud - Based Data Protection Using Block Chain Technology

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E.SivaSankara Vara Prasad⁴, S.Praveen⁵**

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ABSTRACT

The need for Blockchain movement, as well as the meaning of its use, has prompted ongoing research in a number of theoretical and practical sectors. Without a doubt, even at this early stage in its development, the blockchain is being hailed as a game-changing approach for addressing current development challenges such as decentralisation, identification, trust, character, data ownership, and data-driven decisions. The blockchain advancement makes a significant contribution when successfully looking for the best solution for cloud data management and access. This article examines how blockchain headways may be used to get authorised registration. This research article also proposes a paradigm for data security in a distributed processing environment. For data security, this design makes use of creative arrangements and an access.

Keywords:AccessList,Blockchain,CloudSecurity,CloudStorage,SmartContracts.

INTRODUCTION

The meteorological feature from which it gets its name, dispersed registering, will not be immediately detected. Various definitions employ the Internet as a comparative shared component. Using all of the PC's available gadgets, including the Internet, in everyday presence from a single PC or a single area is referred to as circulated figuring. It is also built for use with shared PC groups and applications that manage local servers. The arranging and limit of their data don't aggravate cloud clients. The ventures are simply being used wherever and all of a sudden. Virtualization (Hypervisor) and virtual devices are the middle drivers of this advancement [1].

Virtualization is a strategy of simulating real-world devices by copying code from the operating system and applications. The hypervisor package is installed on the system. In addition, the software downloads archives that represent a virtual computer. A virtual contraption is a script that has a vast number of elements that are supposed to work together to create a working construction. The virtualization of devices and working structures hides the customer's true identities. The hypervisor is a virtualization component that employs a pair of virtual working structures to rapidly decompile a comparable actual PC [2].

On a single server, a number of virtual server events connected by a virtual switch can be shown. The strategy entails setting up a virtual server homestead with comparable functionality to the real-world rack device environment. This framework's visible redundancy aids customers in accessing apps from any location and at any time. Definition is crucial. Clients can access a pool of PC organisations, such as programmes, CPUs, RAMs, database systems, virtual servers, and association structures, over the cloud.

The US State Institute of Standards and Technology has established a method of a standard pool of customizable enlisting instruments (for example, Networks, servers, storage, applications, and utilities) that may be quickly furnished and transferred applying little support efforts or barrier

Hall Effects on MHD Rotating Nano Fluid Over a Moving Flat Plate with Radiation and Chemical Reaction



Pushpabai Pavar, L. Harikrishna, and M. Suryanarayana Reddy

Abstract In this manuscript, we have deliberated an unstable free convection stream of Nano fluid limited with a “moving vertical flat plate” through a porous medium in revolving framework with conditions of diffusion and convection and also bringing current of Hall into account. We acknowledged two kinds of Nano fluids: they are TiO_2 –water and Ag–water. The governing equations would be illuminated analytically by utilizing the method of perturbation. Last, the impacts of different dimensionless factors on temperature, velocity, and concentration profiles along with Sherwood numbers, shear stress, and local Nusselt are deliberated with support of graphs.

Keywords Nano fluid · Rotation · Radiation · MHD · Chemical reaction

1 Introduction

The exchange of convective temperature in Nano fluids has various applications and participates in a critical part in engineering and sciences. They exist in almost each methodology that needs solar energy, exchange fluids of temperature (cooling or heating), and nuclear reactors and so on. Therefore, from previous years, the scientists of fluid dynamics have demonstrated an interest in the investigation of Nano liquids because of their requisitions in different fields. It may be the way that the usually utilizing liquids displays less “thermal conductivity” compared with the metals. Consequently, it will be needed to combine the metals and liquid expanding the heat exchange capacity of liquids. The “suspension of Nano-sized elements” in

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53

Photostable electroactive polymer based nanocomposite films for the protection of mild steel from corrosion

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1–13

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Abstract

The deterioration of organic film due to chemical and UV attack is an increasing concern in paint technology. Thus, the development of new material for UV blocking anticorrosive film draws significant attention in materials science research. This can be achieved by the incorporation of wide band gap nanoparticles like titania (TiO₂NPs) and zirconia (ZrO₂NPs) in electroactive polymer namely poly(pyridine-4-yl-methyl) methacrylate-co-butyl methacrylate (poly(PyMMA-co-BMA)) film (hybrid film) for the protection of mild steel (MS) from corrosion. The TiO₂NPs and ZrO₂NPs in combination with polymer absorb more UV light which prevents the deterioration of film. The hybrid material made of poly(PyMMA-co-BMA) and wide band gap nanoparticles was prepared by *in situ* solution polymerization. The resultant hybrid materials were characterized by various techniques namely X-ray diffraction studies (XRD) and transmission electron microscopy (TEM). The hybrid materials were deposited as film on the MS by spin coating method. The anticorrosive performance of hybrid films was analysed out using potentiodynamic polarization and electrochemical impedance spectroscopy (EIS) studies. The surface examination of films were characterized with scanning electron microscope to confirm the formation of poly(PyMMA-co-BMA) and its different nanocomposite films on MS. The UV blocking studies were also carried out using UV-visible spectroscopy. The electrochemical and optical studies reveals that the poly(PyMMA-co-BMA)/TiO₂ film on MS in 3.5% (w/v) NaCl provides better protection against corrosion than ZrO₂ based nanocomposite hybrid film.

Keywords

Polymer, nanoparticle, nanocomposites, UV protective coatings, anticorrosive coatings

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Introduction

The protection of steel surface against corrosion in marine environment is typically done by using organic coatings. Nevertheless, degradation of organic coating takes place upon exposure to UV radiation on its coated surface. Hence, researchers are combining the inorganic nanoparticle with the organic polymer attributes to boost the anticorrosive properties and stability of organic coating materials.^{1–5} Ammar et al. reported that the incorporated nano ZnO particles in the hybrid polymeric matrix had improved the hydrophobicity, anticorrosive and thermal properties of coating.² The inclusion of titanium dioxide nanotubes significantly enhances the thermal stability, corrosion and heat resistant ability of epoxy resin.³ It is apparent that the addition of nanoparticles in polymers could improve the anticorrosive property of resultant organic hybrid coatings. According to Ramezanzadeh et al. the progress in corrosion protection performance of the organic hybrid coatings (epoxy based) can be explained with the following mechanism: first, well-dispersed nanoparticles within the polymeric matrix lead to improve the quality of coating by reducing the porosity and tortuosity in the diffusion pathways. Secondly, the inclusion of the nanoparticles strengthens the adherence of the cured epoxy on the surface of the substrate.⁶

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Synthesis and photoluminescent characteristics of Sm³⁺-doped Ba₃(PO₄)₂ phosphor hierarchical architectures

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ABSTRACT

Highly uniform, petal-like, 3D-structured Ba₃(PO₄)₂ phosphors were fabricated by facile wet chemical aqueous solution route. The production mechanism of Ba₃(PO₄)₂ petal structure was optimized using XRD and SEM analysis grown under various temperatures and reaction times. Phase transition of Ba₃(PO₄)₂ from the hexagonal to rhombohedral occurred with increasing reaction temperature. The Rietveld refinement based XRD phase analysis demonstrated the successful formation of monophasic Ba₃(PO₄)₂. Later, Ba₃(PO₄)₂ was doped with various amounts of Sm³⁺ ions and with charge balance by Li⁺ ions. Ba₃(PO₄)₂: Sm³⁺+Li⁺ samples at 0.06 mol of Sm³⁺ concentration displayed maximum luminescence intensity in response to 402 nm excitation. Increasing the Sm³⁺ content over the 0.06 mol, emission quenching behavior was observed and it was explained by Dexter's theory. The chromaticity coordinates of the Ba₃(PO₄)₂:Sm³⁺+Li⁺ phosphor material were calculated to be (0.5558, 0.4380), suggesting that it will be a potential yellow phosphor for use in W-LEDs in combination with blue LEDs chips.

1. Introduction

Metal phosphate-based materials have gained great attention in the industrial and scientific community due to their promising applications such as optoelectronics, sensors, supercapacitors, photocatalysts, lithium-ion batteries, and 3D printing [1–6]. Metal phosphates having the advantage of abundance, eco-friendliness, and cost-effectiveness and thus are emerging as a promising class of luminescent optical materials. Among alkaline earth orthophosphates, barium orthophosphate (Ba₃(PO₄)₂) is a vital phosphor material because of its good luminescence efficiency and color purity and combined with a low preparation temperature, stoichiometric, and friendly environmentally characteristics [7,8]. Moreover, with PO₄³⁻ building unit it can be a good host matrix to accommodate a wide range of luminescent rare-earth ions.

A comprehensive review of the literature on the fabrication of Ba₃(PO₄)₂ phosphors shows that Ba₃(PO₄)₂ is a flexible host material with the ability to form visible-emitting phosphors doped with a selection of transition metal ions (e.g., Ni²⁺, Mn²⁺, Mn³⁺, Mn⁵⁺) [3,5,9],

single lanthanide ion dopants (e.g., Eu²⁺, Ce³⁺, Sm³⁺, Eu³⁺, and Tb³⁺) [10,11], and lanthanide co-dopant ions (e.g., Ce³⁺-Dy³⁺ and Eu³⁺-Tb³⁺) [12,13] and to form infrared-emitting phosphors with the addition of Mn⁵⁺ ions [3]. All these previously reported doped Ba₃(PO₄)₂ materials were synthesized by a regular solid-state reaction (SSR) route, which has disadvantages of producing block-shaped particles with poor particle size distribution and defects, resulting in sub-optimal performance. In addition, the long sintering time and high-temperature in the SSR method significantly increase cost and several impurity phases in the product materials. To overcome these disadvantages of the SSR method, soft chemical synthesis methods such as sol-gel, precipitation, hydrothermal, and ion exchange syntheses [8,10,12–13] methods were developed.

Several wet chemical methods have attracted attention for preparing phosphors with well-controlled sizes and different shapes. Wet chemical methods offer uniform mixing of the precursor materials, low reaction temperature, and remarkable chemical homogeneity. For example, Cheng et al. successfully synthesized Eu²⁺- and Tb³⁺-doped Ba₃(PO₄)₂

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Green synthesized AgNPs decorated on Ketjen black for enhanced catalytic dye degradation

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Abstract

The green synthesis of nanoparticles using plant-based materials as an alternative to chemical and physical routes provides economic and environmental benefits. In the present study, silver nanoparticles (AgNPs) were fabricated using *Pseudocycdonia sinensis* fruit extract. The fabricated NPs were then decorated on commercial Ketjen black-300 (AgNPs@KB-300) and Ketjen black-600 (AgNPs@KB-600). The synthesized materials were characterized via XRD, FTIR, XPS, SEM-EDX, and HR-TEM studies. The SEM and HR-TEM results revealed that the synthesized AgNPs were spherical and successfully decorated on KB-300 and KB-600. Additionally, the catalytic ability of the synthesized samples during the degradation of methyl orange in the presence of NaBH₄ was studied. Notably, the catalytic activity of AgNPs@KB-600 was higher than that of AgNPs@KB-300.

Keywords Green synthesis · AgNPs · Ketjen black · Methyl orange · Catalytic activity

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Facile One-Pot Decoration of SnO₂ Quantum Dots on the Surface of the Iron Phosphate Nanosheets for Enhanced Catalytic Decolorization of Methylene Blue Dye in the Presence of NaBH₄

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Abstract

Herein, a SnO₂ quantum dots (SQDs) @ FePO₄ nanosheets (FPNSs) was prepared by a simple procedure without additional instruments and characterized using XRD, FTIR, SEM, and TEM. SQD@FPNSs nanocomposite (FP-Sn) exhibited improved catalytic activity for the degradation of methylene blue (MB). Approximately 92% of the MB was successfully decolorized within 6 min using FP-Sn in the presence of NaBH₄.

Keywords SQDs@FePO₄ · Nanocomposite · Methylene blue · Catalytic study

Introduction

Water pollution by textile dyes has become a major environmental problem nowadays. Organic dyes are extensively used in the textile, paper, leather tanning, pharmaceutical, food, and cosmetic industries [1]. Especially, the textile and dyeing industries release a large amount of wastewater, which pollutes the environment and also adversely affects human health, aquatic organisms, animals, and plants [2]. Therefore, industrial wastewater treatment has received considerable attention as a clean environment is essential to life. Methylene blue (MB) is a cationic azo dye (molecular formula: C₁₆H₁₈N₃SCI) widely

used in the paint, textile, paper, and printing industries and causes vomiting, eye burns, skin irritation, breathing hazards, mental disorders, hyperhidrosis, and severe central nervous system toxicity and ecological damage if discharged without proper treatment [3–5]. Therefore, the development of a simple and rapid method for the efficient degradation of dyes has attracted extensive attention. Nanocatalysts increase the catalytic degradation of organic dyes activity because their higher surface area [6].

Iron phosphate has been successfully used as a catalyst in the steel and glass industries [7], an electrode material for lithium batteries [8], and in water purification applications [9] due to its abundant resources, low price, eco-friendliness, high catalytic and electrochemical, properties and ion exchangeability [10, 11]. To date, among the various types of metal-oxide nanoparticles used for several applications, SnO₂ is the best material due to its significantly high conductivity, chemical stability, transparency [12] and wide application in Li-ion batteries [13], catalysts [14], gas sensors [15], optoelectronic devices [16] dye-sensitized solar cells [17], and energy-storage device applications [18]. Archita and Ahmaruzzaman [19] reported the catalytic reduction of p-nitrophenol using green synthesized SnO₂ quantum dots. Francis and Venugopal [20] synthesized SnO₂-SiO₂ nanocomposite using rice husk extract. The synthesized nanocomposite showed high catalytic activity of rhodamine B (90%) and crystal violet (93%) in the presence of NaBH₄.

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Magnetic properties of (Mn, Al) doped SnO₂ nanoparticles: synthesis and characterization

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ABSTRACT

Pure and (Mn, Al) co-doped SnO₂ nanoparticles were synthesized using coprecipitation method. Different concentrations of Mn (1, 3, 5 mol%) were doped into SnO₂ at 5 mol% constant concentration of Al. The X-ray diffraction (XRD) studies revealed the formation of single tetragonal rutile-type phase in pure and (Mn, Al) doped SnO₂ nanoparticles. The particle sizes were in the range of 20–30 nm, as calculated from the XRD data. Raman studies revealed that the pure and (Mn, Al) doped SnO₂ nanoparticles have active modes at 150 (B1g), 306 (Eu), 476 (Eg), 625 (A1g) and 776 cm⁻¹ (B2g) corresponding to tetragonal rutile-type phase SnO₂. The SEM micrographs show that the surface morphology of samples was formed by non-uniform spherical in shape particles. The chemical composition of samples was analyzed by EDAX spectra analysis. The presence of Sn⁴⁺, Al³⁺, O⁻² and Mn²⁺ ions was confirmed in the prepared samples. The observation of TEM micrographs confirmed the non-uniform spherical shape surface morphology of nanoparticles and their sizes about 20–30 nm. The UV–VIS absorption spectra show absorption edge at ~ 320 nm, whereas the photoluminescence spectra show the emission peaks at 419, 420, 442, 445 and 462 nm under the excitation at 350 nm. The vibrating sample magnetometer shows diamagnetic nature for pure SnO₂ and Ferro magnetism for co-doped SnO₂ samples. The ferromagnetism increased in (Mn, Al) co-doped SnO₂ samples at higher Mn concentrations.

1 Introduction

Diluted Magnetic Semiconductors (DMS) doped with transition metals (TM) are suitable materials for spintronics applications. These are examined intensively due to their sole properties and novel

applications at high temperatures (T_c) [1]. The room temperature ferromagnetism (RTFM) in various TM doped oxides such as SnO₂ [2–4], ZnO [5, 6] and TiO₂ [7, 8] was studied. Among these, Tin dioxide (SnO₂) is an n-type semiconductor, it has wide band gap (3.6 eV) and pronounced potential in spintronics

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Heat transfer over a stretching porous surface on a steady MHD fluid flow

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Heat generation and Chemical reaction impact on MHD Rotating flow past a Vertical Porous plate

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Abstract: The purpose of this article is to examine the second-grade fluid MHD rotary stream past the imprudently flowing porous upward platter with the impact of warm and chemical reactions. The dimensionless controllers are paired with nonlinear configurations for analytical consequences, calculated by the method of finite differences. The speed, temperature and concentration profiles are expressed graphically, whilst the skin friction, Nusselt, and Sherwood numbers are offered in an understandable form for momentous flow parameters. Thermal radiation and warm dissemination both are thundering the boundary layer area help to increase the fluid temperature. Mass distribution continues to maximize concentration across the whole border region. The pivot and fluid parameter of the second grade appear to boost in x and z directions. The velocity, temperature and concentration outlines are built in particular for different control boundaries. Hartman Number (M₂), Heat Source (Q₀), Thermal Radiation Parameters (N), Thermal Grashof (Gr), Mass Grashof (G_c), Prandtl (Pr). The thermal boundary layer thickness is indicated to be substantially increased if the content of the Dufour number is expanded. The existence of a chemical reaction enhances the mass transfer rate, the optimal consequence of the organisms' progression.

Keywords: Chemical reaction, MHD, Finite difference method, Porous plate, Heat source.

MSC 2020 No.: 76W05, 76M55, 76D05, 76S05

1. Introduction

Non-Newtonian fluids are commonly employed in a variety of scientific, biological, medical, agricultural, etc. The equations of Navier-Stokes are scarce in the analysis of non-Newtonian liquids owing to the nonlinear interaction between stress and strain rate; thus, the rheological models used for Navier-Stokes equations are different. MHD is the synthesis of magnet fields and fluids, MHD fluxes exist in ionosphere generators, sun and electricity generators, etc. Special hydromagnetic effects are essential for the analysis of non-Newtonian fluids. The analysis of fluids of non-Newtonian nature under a heat source or sink control has numerous applications such as chemical refining, nuclear plants, electric conductions and cooling. The radiation influence of free convection flow was exposed by Chamka, A.J. et al.[3], past a semi-unbounded upward platter with mass transfer. Ganesan, P. et al. [4-8] examined the expected convection effects of heat and mass propagation on the pulsed inclined plate. K. VB kumar et al. [9] studied the steady MHD Casson In the presence of Soret Ohmic heating and the viscous dissipative fluid stream, Hall and Ion-slip currents move an unbounded upward porous layer. Summary Nandita et al. [10] possessed In Hall current and rotation the unstable Free movement of convective MHD going past a porous vertical platform with periodic movement and slipping age. B. R. Sharma et al. [12] The MHD movement, heat and mass transfer was researched by under the influence of radiation, chemical reaction and heat production or absorption effects in permeable revolving vertical cones. M. Veera Krishna et al.[17] has examined MHD Spinning Flow Heat and Mass transmission of Second Grade Fluid, and has passed an Infinite Square in Uniform Permeable object with Hall Results.

In the application of geophysics, petrochemistry, meteorology, oceanography and aeronautics, the principle of fluid movement and mass transmission via a porous object in revolving atmosphere plays an important part. The stimulus for scientific studies on the rotating fluid system is primarily extracted from geophysical applications and fluid engineering. The rotational flow principle shall be used to calculate fluid viscosity, rotor shape and other centrifugal machinery. The fluid flow issues in rotating media have brought many researchers to focus on who has studied the hydrodynamic flux of viscous and incompressible fluid in a rotating medium in various ways. F. The chemical reaction results of an MHD spinning fluid were explored by Mabood et al. [11]

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ANALYSIS OF MHD NANOFUID IN A ROTATING SYSTEM UNDER THE EXISTENCE OF HEAT ABSORPTION

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Abstract: An unsteady MHD free convective flow of nanofluids through porous medium bounded by a moving vertical semi-infinite permeable flat plate with constant heat sink in a rotating frame of reference is studied theoretically. The novelty is the consideration of constant heat sink and convective boundary condition in a rotating frame. The velocity along the plate i.e., slip velocity is assumed to oscillate in time with constant frequency so that the solutions of the boundary layer are the same oscillatory type. The dimensionless governing equations for this investigation are solved analytically using small perturbation approximation. The nanofluid namely TiO_2 -water is taken into consideration. Heat and mass transfer characteristics under the influence of various physical parameters are discussed through graphs and tables. An increase in the convective parameter and nano particle volume fraction lead to increase the thermal boundary layer thickness but opposite effect occurs for heat absorption.

Keywords: Nanofluids, Convective boundary, heat and mass transfer, rotating system and porous medium

1. INTRODUCTION

Convective heat transfer in nanofluids is a major contemporary topic in sciences and engineering. Nowadays the development of high performance thermal systems for heat transfer enhancement has become popular. The enhancement of heating and cooling fluids in an industrial process saves energy, time and lifespan of the equipment. Heating and cooling fluids such as water, ethylene glycol and engine oil play a vital role in thermal management of high tech industries but they exhibit poor thermal characteristics in a certain thermal conductivity. To understand the heat transfer performance for the practical applications a number of works has been performed. Using nanofluid in a stretching surface Akbar et al. (2013) explained the radiation effects on MHD stagnation point flow with convective boundary condition. Bahiraei et al. (2017) gave assessment and optimization of hydrothermal characteristics for a non-Newtonian nanofluid flow within miniaturized concentric-tube heat exchanger considering designer's viewpoint. Bahiraei et al. (2018) analyzed development of chaotic advection in laminar flow of a non-Newtonian nanofluid: A novel application for efficient use of energy and Recent research contributions concerning use of nanofluids in heat exchangers: A critical review. Chamka et al. (2011) discussed MHD free convective flow past a vertical plate in the presence of heat generation or absorption effects using nanofluids. Chandra Reddy et al. (2018, 2019, 2020) examined MHD natural convective heat generating/ absorbing and radiating fluid past a vertical plate embedded in porous medium and derived an exact solution. Das (2014) discussed thoroughly flow and heat transfer characteristics of nanofluids in a rotating frame. Hamad et al. (2011) analyzed unsteady MHD free convective flow past a vertical permeable flat plate in a rotating system with constant heat source constant. Sheikholeslami et al. (2014) analyzed the three dimensional heat and mass transfer in a rotating system using nanofluid.

The objective of the present study is to analyze an unsteady MHD free convective flow of nanofluids through porous medium bounded by a moving vertical semi-infinite permeable flat plate with constant heat sink and convective boundary condition in a rotating frame. It is assumed that the plate is embedded in a uniform porous media and oscillates in time with constant frequency in the presence of transverse magnetic field.

2. MATHEMATICAL FORMULATION OF THE PROBLEM

Consider the unsteady three dimensional free convection flow of an electrically conducting incompressible nanofluid of ambient temperature T_∞ past a semi-infinite vertical permeable moving plate embedded in a uniform porous

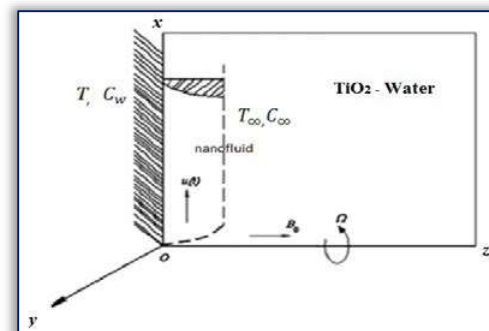


Figure 1: Physical model of the problem

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In Situ Synthesis of β - $\text{Na}_{1.5}\text{Y}_{1.5}\text{F}_6$: Er^{3+} Crystals in Oxyfluoride Silicate Glass for Temperature Sensors and Their Spectral Conversion and Optical Thermometry Analysis

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Abstract

Transparent oxyfluoride glass-ceramics (GCs) with embedded β - $\text{Na}_{1.5}\text{Y}_{1.5}\text{F}_6$ crystals doped with Er^{3+} ions were fabricated by a melt-quenching method with subsequent heat-treatment. The structural characterizations and spectroscopic techniques were performed to verify the precipitation of β - $\text{Na}_{1.5}\text{Y}_{1.5}\text{F}_6$ crystals and partition of the Er^{3+} dopant into the crystals. Bright green up-conversion (UC) emission was achieved in Er^{3+} -doped glass-ceramic (Er-

NIMBOCHALCIN FROM *AZADIRACHTA INDICA*

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ABSTRACT

Global population up to 80 percent, relies on traditional medicine for their primary health care. The usage of medicinal plant/herbal medicine for treating various disorders and diseases is rapidly progressing due to their less side effects. *Azadirachta indica* (Neem) belongs to the family *Meliaceae*, cosmopolitan in distribution, widely used in ethno traditional medicine. For centuries in India, it is commonly used in several native medical practices. Its vegetative parts such as leaves, flowers, fruits, seeds and bark known to possess numerous bio-active molecules, so affectionately called as store house of phytochemicals. Its chemical composition is quite complex. Few studies characterized, and separated some of the bioactive molecules and reported with substantial biological activities. However, in the

present study, we identified, the presence of Dihydrochalcones like Nimbochalcin in the vegetative parts of *Azadirachta indica* (Neem) extracts using LC-MS (Liquid Chromatography and Mass Spectroscopy) spectral analysis. Moreover for the first time, we

Hydrothermal Synthesis of MnWO₄@GO Composite as Non-Precious Electrocatalyst for Urea Oxidation

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Abstract

In this study, manganese tungstate (MW) and MW/graphene oxide (GO) composites were prepared by a facile hydrothermal synthesis at pH values of 7 and 12. X-ray diffraction (XRD), scanning electron microscopy (SEM), transmission electron microscopy (TEM), X-ray photoelectron spectroscopy (XPS), and Raman spectroscopy were used for the structural, compositional, and morphological characterization of the nanoparticles (NPs). The XRD analysis revealed that the formation of monoclinic MnWO₄ did not have impurities. The SEM and TEM analyses showed that the synthesized NPs were rod-shaped and well-distributed on the GO. The as-synthesized samples can be used as electrocatalysts for the urea oxidation reaction (UOR). The MW@GO-12 electrocatalyst exhibited higher current density values compared to other electrocatalysts. This study provides a new platform for synthesizing inexpensive nanocomposites as promising electrocatalysts for energy storage and conversion applications.

Keywords: hydrothermal (/search?q=hydrothermal); MnWO₄ (/search?q=MnWO4); graphene oxide (/search?q=graphene+oxide); urea oxidation reaction (UOR) (/search?q=urea+oxidation+reaction+%28UOR%29)

1. Introduction

Urea (CO(NH₂)₂) is an abundant and easily available substance, which is found in human and animal urine and is widely used in the chemical industries and agriculture [1]. Urea-rich wastewater causes serious health issues like throat and lung irritation and environmental damages like eutrophication and acid rain [2,3]. However, urea is an efficient hydrogen (H₂) carrier with non-flammable, non-toxic, and colorless properties [4,5,6]. Various traditional methods are used to treat urea-rich wastewater such as hydrolysis [7], adsorption [8], chemical oxidation [9], and biodegradation [10]; however, these methods are inefficient and expensive. Hence, it is important to develop an efficient, cost-effective, and convenient method to degrade urea-rich wastewater. The electro-oxidation of urea is essential in wastewater treatment and hydrogen production, solving both energy and environmental problems [11]. Noble metal-based catalysts are efficient catalysts for the urea oxidation reaction (UOR), but they are expensive, scarce, and limited to large-scale applications [12]. Hence, developing active, cost-efficient catalysts, which are easily available, is essential.

Manganese tungstate (MnWO₄) is an inexpensive and eco-friendly material, and it has recently attracted attention owing to its high electronic conductivity, effective redox chemistry, and electrochemical, multiferroic, and ionic properties [13,14,15,16]. It is used in photocatalysis [17], electrocatalysis [18], gas sensors [19], and supercapacitors [20]. The use of transition metal oxides combined with carbon-based materials is a suitable way to improve the electrochemical properties [21,22,23]. Carbon-based materials play an important role in energy storage devices, transistors, sensors, etc., as they possess high physical, chemical, electrical, and thermal properties [24]. Among carbon materials, GO, the oxidized form of graphene, has a large surface area and displays strong hydrophilicity owing to the abundant oxygen-containing groups on its edges [25]. Furthermore, these functional groups (carboxylic, hydroxyl, and carbonyl) have been actively used to build novel composites. Mallick et al. synthesized cotton-fabric-derived mesoporous carbon-supported MnWO₄ nanostructures for Zn-ion batteries [26]. Sardar et al. synthesized a MnWO₄/amorphous CNT hybrid material for supercapacitor applications [27]. Xu et al. synthesized a GO/MnWO₄ composite for magnetic resonance/photoacoustic dual-modal imaging and tumor photothermo-chemotherapy [28]. Jianhua et al. reported a layered MnWO₄/rGO nanocomposite for supercapacitor applications [29].

In this study, we synthesized MW@GO at pH values of 7 and 12 by simple hydrothermal synthesis, and it had a nanorod-like morphology. It is extremely active in electrocatalytic urea oxidation under alkaline conditions. The XRD, TEM, Raman, and XPS results revealed that no impurity was observed between MnWO₄ and GO. The hydrothermal synthesis is simple, rapid, and cost-effective, and the as-synthesized catalysts are inexpensive alternatives to precious metal catalysts for electrocatalytic UORs.

2. Materials and Methods

2.1. Synthesis of Electrocatalysts

All the chemicals used were of analytical grade and were obtained from Sigma-Aldrich. They were used directly without additional purification. Initially, GO (0.1 mg/mL) was sonicated for 1 h in a 50:50 v/v ratio of ethanol and DI water, and later Mn(NO₃)₂ (1.0 g) was added and stirred for 30 min to completely dissolve the salt. A second solution was prepared (50:50 v/v ratio of ethanol and DI water) and Na₂WO₄ (1.2 g) was also added and stirred for 30 min. The second solution (Na₂WO₄) was added dropwise to the first solution (GO-Mn(NO₃)₂) and stirred for 30 min. The ammonia solution was added until the pH reached 12, the reaction was shifted to a hydrothermal setup, and the temperature was maintained at 180 °C for 12 h. The mixture was allowed to cool naturally, after which the solid electrocatalyst was collected by centrifugation and dried at 70 °C. It was labeled as MW@GO-12 and left overnight. Other electrocatalysts

APPLICATION OF ALTMAN'S Z SCORE MODEL IN DETERMINING THE FINANCIAL RELIABILITY OF SELECTED PLASTIC COMPANIES IN INDIA

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ABSTRACT

Financial Health of the firm is one of the most crucial aspects for the stakeholders, they all wish to know whether the organization will do better in future in order to keep their interest intact with the organization. There are two main parties which are interested in the company's performance and growth. They are the internal users of information and external users of information. Internal users comprise of shareholders, officers, managers, employees and internal auditors. The Altman's Z Score Model which is a combination of five weighted business ratios that is used to estimate the likelihood of financial distress is the most used model to predict bankruptcy. It was developed in 1968 by Edward I. Altman, an Assistant Professor of Finance at New York University, as a quantitative balance-sheet method of determining a company's financial health. It has been proven to be a reliable tool across the globe. As per the model, bankruptcy could be predicted two years prior to the happening on the event in India. In conclusion, the Altman Z score can be applied to other Indian companies to predict bankruptcy and measure its financial health.

Keywords: Altman Z Score, Financial Health, GNPA's and Net Profits

Introduction

In the present scenario of business, the enhancing uncertainty scenario takes away the safekeeping of existence from firms. Perhaps to be confident of the longevity of the firm becomes the prime issue of concern by all the business houses. Z score is an analytical way of screening the financial soundness of a company. It is the easiest accessible tool for any investor or stakeholder. It provides a clear lead to evaluate and understand the company's financial position. Most of the organizations exist with an objective of profit maximization. To achieve profit maximization objective, firm needs strong internal and external support. The failure of internal support system such as effective utilization of funds, labour, material etc. And external support system such as economic, political and socio-cultural conditions results in Bankruptcy of the organization. In order to predict the bankruptcy or financial distress or financial health or financial performance of a company Altman z-score is used. Z-score value is calculated by using ratio analysis.

The Z-score formula for predicting bankruptcy was published in 1968 by Edward I. Altman, an Assistant Professor of Finance at New York University. The formula may be used to predict the probability that a firm will go into bankruptcy within two years. Z-scores are used to predict corporate defaults and an easy-to-calculate control measure for the financial distress status of companies in academic

studies. The Z-score uses multiple corporate income and balance sheet values to measure the financial health of the company. In this model, if the Z value is greater than 2.6, then the firm is said to be in the "safe zone" and has a negligible probability of filing a bankruptcy. If the Z value is between 2.6 and 1.1, then the firm is said to be in the "grey zone" and has a moderate chance of bankruptcy. If the Z value is below 1.1, then it is said to be in the "distress zone" and has a very high probability of reaching the stage of bankruptcy.

Altman z-score predicts the performance analysis of company in past as well as next 2 years performance or financial health. It uses five elements such as total assets or total liabilities, earnings before interest and tax, retained earnings, market value or book value of equity to find the distress status of a company. Among many z-scores models Altman z-score is the most accurate model.

Altman Z-Score Model: Credit risk. The Altman Z-score has become a reliable measure of calculating credit risk. - NYU Stern Finance Professor Edward Altman developed the Altman Z-score formula in 1967, and it was published in 1968. Over the years, Altman has continued to reevaluate his Z-score over the years. From 1969 until 1975, Altman looked at 86 companies in distress, then 110 from 1976 to 1995, and finally 120 from 1996 to 1999, finding that the Z-score had an accuracy of between 82% and 94%. In 2012, he released an updated version called the Altman Z-score Plus

A CONCEPTUAL STUDY OF THE HRM CHALLENGES IN IT INDUSTRY

T. Navaneetha¹

Abstract

Human resource management challenges play a vital role in the success of the organization. The purpose of this study is to examine the different environmental influences faced by IT Industry, factors affecting HR challenges and to explore various challenges faced by HR managers. The study is done with the help of a secondary data covering all the HRM challenges. Management might be able to increase the level of the commitment in the organization by improving satisfaction with compensation, policies, and work conditions. Companies should involve their employees in decision making as industrial revolution brought drastic changes in the organizations as they viewed it as an indispensable source of competitive advantage. One way of increasing the job satisfaction at the workplace is expanding the interactions level with employees in staff meetings and rising guided discussions of topics related to industrial revolution and HRM issues. If the employees are well aware of the organization environment, their duties, and objectives, they can perform their tasks in a better way, and it helps the organization to enhance its productivity. A highly committed and competent workforce allows companies gain a competitive advantage.

Keywords: Human Resources, Information Technology, HR practitioners, Challenges.

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1. INTRODUCTION

Organizational performance direct towards the overall growth of an organization. Human resource is the most important asset in any organization. It is necessary for the organizations to manage their employees effectively and efficiently. Human resources play a vital role in any organization. It, thus, requires the considerable attention of the management so that employees can work up to their full potential. Human Resource means individuals or staff or workforce within the boundary of an organization they are responsible for performing the tasks assigned to them and they aim to meet the organization objectives and make the profit. Human resource can provide a sustainable competitive advantage by giving them different practices. A company's success depends upon the people who are working in the organization. Human resource considered more important asset in any organization. In any organization, the employees must be treated as a valuable asset; the organization's mission will be achieved in a better way if their skills would be developed. In the presence of the competitive environment, the success of any organization depends upon the capabilities and the caliber of their Human Resource to meet human resource challenges. If there are no human resource management challenges, then company always face the difficulties and not able to perform in the competitive society. Company's current and potential human resources are essential considerations in the development and for the execution of its strategic business plan. Human resources include individuals, staff or workforce within or even outside

the boundary of an organization who are responsible for performing the tasks assigned to them. The main aim of an organization's human resource team is to help the organization in achieving its objectives. Human resource helps the organization in making sustainable competitive advantage.

2. Review of literature:

Bakker^[1] conducted a study to investigate and identify to what extent country differences are affecting the adoption and deployment outcomes of e-HRM and found that generally the role of country differences is suggested to be of no importance, regarding the e-HRM adoption and deployment outcomes. When investigating the featuring of HR processes in an e-HRM application, it was suggested that acquiring HR is likely to be coherent with local recruitment differences.

Shane^[2] conducted a study on Development and Validation of a measure that examines attitudes towards e-HRM Practices in South Africa with the main objective to investigate, analyze and evaluate attitudes towards electronic human resource management (e-HRM) tools within a large South African financial institution. This was done by developing and validating an instrument to determine e-HRM tool usage, e-HRM tool preference as well as attitudes towards e-HRM. A total of 104 HR professionals and line managers completed the e-HRM attitudinal questionnaire. The research summarizes that, users of e-HRM tools had significantly more positive

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CUSTOMER SATISFACTION ON SERVICE QUALITY DIMENSIONS

K. BHASKAR¹, P SUBRAMANYAM²

Abstract

The purpose of this paper is to empirically investigate the influence of dimensions of service quality towards satisfaction in the context of Indian retail market. The paper focused to examine the relationship between satisfaction and service quality dimensions. A study has been conducted on 20 supermarkets in Kadapa district, A.P. India. The results of this research indicate that retail service quality positively influences satisfaction and trust. It is found that satisfaction also positively influences trust and loyalty. Satisfaction and trust mediate the relationship between retail service quality and loyalty on customer satisfaction.

Keywords: Customer, Satisfaction, Service Quality Dimensions and Trust.

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1. INTRODUCTION

Consumer or Customer satisfaction is defined as “the number of consumers or percentage of total consumers, whose reported experience with a firm, its products, or its services exceeds specified satisfaction goals”. Consumer satisfaction is how happy a consumer is with a product or service, both in the producer’s performance as well as the company’s delivery of the product to the market.

In the midst of the shift and fierce competition and increased number of retail outlets providing a variety of products, customers or consumers have become accustomed to patronizing multiple outlets. Retailers have recognized this trend and are of the view that customer or consumer satisfaction plays an important role in the success of business strategies. Therefore, it has become important for retail stores to try and manage customer satisfaction.

This study was thus developed to investigate the satisfaction levels of consumers with respect to dimensions of service quality in future group retail store “Super Market”.

Data was collected from the consumers or customers of ‘Vishnu Super Market’ in Jammalamadugu. The study examined the importance of overall dimensions and specific elements of customer satisfaction towards the measurement of satisfaction levels.

2. REVIEW OF LITERATURE

Satisfaction is the feeling of pleasure or disappointment of a person arising from comparing perceived performances to customer expectations. Customer satisfaction is the goal and the means of the marketer. Satisfaction is also a desirable target for businesses because satisfied customers tend to buy more, go back to the store and spread positive word-of-

mouth to other customers.^[1] Customer satisfaction leads to higher customer loyalty. Customer satisfaction has often been done to explain customer loyalty. The definition of customer satisfaction is not an easy task, primarily because the concept of customer satisfaction is still abstract. Oliver (1999) found that satisfaction is a customer evaluation of a product or service, about a product or service that meets needs and expectations. Grisaffe^[2] demonstrate that satisfaction is an indicator of whether expectations are met or exceeded. Satisfaction is also one of the recommended boosters of intent to re-purchase. If the customer receives what is expected, then the customer will likely be satisfied. Service quality has received tremendous attention from managers and academics due to considerable influence on business performance, cost reduction, customer satisfaction, customer loyalty and profitability. Based on this perspective. Parasuraman et al. (1988) developed a scale to measure service quality, known as SERVQUAL. The SERVQUAL scale has been tested and adapted in many studies conducted across various services, cultural contexts, and geographic locations. These include the service quality offered by the hospital,^[3] website,^[4] dry cleaning and fast food,^[5] banking, these studies do not support all the factor structure proposed by Parasuraman et al. (1988). In SERVQUAL, both store service performance and consumer expectations of the storage service are explicitly measured to assess whether there is a gap. Although SERVQUAL has been empirically tested in many studies that are in purely service-based businesses (e.g., banking, long distance telephony services, securities brokers and credit card services), this is not necessarily successful and valid in retail environment.^[6] Furthermore,

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Impact of corporate reputation on rural consumer brand attitude and purchase intention Markets

P. Venkata Subbaiah¹

Abstract

The main objective of this study is to determine the effects of the negative corporate CEO and corporate social responsibility reputations on the changes in rural consumers' brand attitudes and purchase intentions. To accomplish this study determination, we anticipated the associations between brand awareness and perceived quality and initial brand attitude and purchase intention by relying on the hierarchy of effects model; then we assessed the changes in brand attitude and purchase intention after providing information on negative corporate reputation. Multiple regression analysis and paired samples T-tests were conducted to test the hypothesized relationships using a convenience sample of 670 respondents. The empirical results support significant effects of brand awareness, perceived quality and corporate reputation on brand attitude and purchase intention.

Keywords: Corporate Reputation, Brand Attitude, Purchase Intention.

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1. INTRODUCTION

The strong image of a company is a positive opportunity for businesses to succeed well sustainably. The strong name of the company has numerous advantages for companies, such as investments. In addition, the positive image of companies contributes to the development of customer engagement with the brand. Thus, company credibility has attracted unparalleled recognition from academia as well as from businesses as one of the most useful corporate immaterial assets. In view of the diverse researchers' views of the company credibility, there is no agreement among researchers on the concept of the company's reputation. In the domestic and external view, corporate credibility is characterized as an overall assessment of a company by the stakeholders over time. In addition, the reputation was described as a perceptual representation of the past activities and prospects of a business, which in comparison to other top rivals, characterize the overall call of the company to all its major constituents' Corporate credibility as observer of a company's mutual judgments on the basis of economic, social and environmental evaluations over period of its associated impacts.

The distinction is between corporate, corporate brand, and reputational capital, with corporate identity defined as symbolic collections, pictures defined as observer's general perceptions of companies, and reputable asset quality described as distinct symbol gathering and renowned capital. The goal is to prepare an individual to respond prior to the action, the Planned Behavior. Before behavioral control, personality, and subjective norm, theory was employed to describe what happened. In certain cases, these three things were employed in a direct measure to define an individual's

real and indirect intents, such as voluntary articulation and conveyance. Attitude includes evaluating the behavioral advantages and downsides. Subjective norm refers to a person's understanding of social conduct. Perceived control of activities requires trust in one's own acts. This principle of deliberate provocation has been very well used and used by several investigators for a long time. An individual's psychological traits are used to measure their attitude.

Assessing the consumer's attitude about the company is critical since it tends to match positively with market tastes and purchase intentions. The reasoning principle of action (TRA) contends that actions are inextricably linked. According to TRA, the most important determinants of human actions are behaviour and subjective norms. Measuring client brand sentiments as both context and implications is so critical for advertisers. A wide range of research can provide the possible context and outcomes for consumer reactions to a firm. However, in earlier academic study, brand experiences as well as a history of client brand attitude were given less significance. Furthermore, there seem to be a few trials that experimentally investigate the impact of marketing activity on consumer brand.

2. Review of Literature:

Customer preferences or experiences of the company, including such brand recognition (Gaines-Ross 1997), value perception (Caruana and Chircop 2000; Chun 2005), beliefs toward product,^[1] and purchase intent, are used to assess company image and its consequences.^[2,3,4] The HOE model describes the connections between such variables.

A Study on Quality of Work Life and Turnover Intention Among Academicians

S.M.D. Azash¹, M.Sudheer Kumar²

Abstract

Background: This study was aimed to investigate the various dimensions of quality of work life of higher educational teachers working in engineering colleges affiliated to JNTUA, Anantapur. And the relationship among six-dimensional Quality of work life with job satisfaction, organizational commitments and turnover intention.

Methods: A cross-sectional survey was used in this study. Data were collected using Brooks' Quality of Work Life, the Anticipated Turnover Scale and demographic data questions. A total of 500 faculty working in private engineering colleges affiliated to JNTUA Anantapur in Rayalaseema region and Nellore district of Andhra Pradesh is selected base on stratified random sampling method is adopted. Descriptive statistics, t-test, ANOVA, correlation and multiple regression were applied for analysis using SPSS v 21 for Windows.

Results: The findings suggest the importance of overall Quality of work life of engineering teachers in enhancing their commitment and retention. The present study concludes that employees' perceptions on the relationship among Quality of work life, organizational commitment and turnover intention will improve, if organization approaches its employees' management activities from the perspective of cultivating Quality of work life that should be reflected in the formal organizational policy and procedures.

Keywords: Engineering College, Job Satisfaction, Organization, Organizational Commitments, Quality of Work Life and Turnover Intention.

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1. INTRODUCTION

Since the early eighties, due to rapid industrialization and economic growth, engineering and technical education in India have been developing faster than anywhere else in the world, and India now has the second largest number of engineering students in the world. Recent Indian scientific, industrial and technological development, particularly in space, nuclear and missile technology, computer engineering and information science has achieved a lot. Since technical education determines the development and socioeconomic condition of a nation, there is a greater need for high quality technical education to produce technically skilled manpower in India. The basic components of a technical institute are the students, the infrastructure, the teachers, the curriculum, the teaching and learning aids, the linkage mechanism with industry-institute and other user system, the management system, the support services system, the guidance and counselling, the internal and external evaluation system, the feedback system, etc. There are other important components which are called the process components. They are, way of teaching, the way the students learning, students activities beyond the regular time table, the motivation of both faculty and students, attitude of the management, the overall academic climate, the opportunities and encouragement for innovations and creativity, research and development,

the openness of communications, the leadership qualities of head of institutions and of departments, the sense of involvement in providing quality services, the organization structure, the quality of team work, the reward and recognition system, the faculty development programme, the appraisal system, the clarity in the vision and objectives of the organization.

Today engineering colleges must not only provide their graduates with the intellectual development and superb technical capabilities but following industry's lead, colleges must educate their students to work as part of teams, communicate well, and understand the economic, social, environmental and international context of their professional activities. These changes are vital to the nation's industrial strength and to the ability of engineers to serve as technology and policy decision makers.

2. CONCEPTUAL FRAMEWORK OF QUALITY OF WORK LIFE AND TURNOVER

Quality of Work Life bears different meanings based on different interpretations and practices. The American Society of Training and Development established a task force on the QWL in 1979 and the task force defined QWL as "a process of work organizations which enables its members at all levels to actively participate in shaping

Impact Of Retail Investors Opportunities On Mutual Funds In Andhra Pradesh

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Abstract

Mutual Funds provide a platform for a common investor to participate in the Indian capital market with professional fund management irrespective of the amount invested. The Indian mutual fund industry is growing rapidly and this is reflected in the increase in assets under management of various fund houses. Mutual fund investment is less risky than directly investing in stocks and is therefore a safer option for risk averse investors. The study investigated the impact of retail investors opportunities on mutual funds, concluded that retail investors opportunities significantly impact on mutual funds in Andhra Pradesh. Conclusion drawn from the test of difference was that no significant difference existed on the factor of retail investors opportunities of mutual funds across gender, age, occupation, qualification and income are accepted.

Key Words: Retail Investors, Opportunities, Mutual Funds and Andhra Pradesh.

Introduction

In the kingdom of households, one of the biggest trends that have arisen in the past 20-25 years is disintermediation sometimes called disaggregation of financial services. Householders are being called upon to make complex and important financial decisions that they did not have to make in the past. A prime instance in the investment management area is in providing for retirement. In the past, people had defined benefit pension plans provided by their employers. Pension plans specified benefits as a fraction of final pay scale before retirement and require no management on the part of the householder. For some time, the trend had been to replace these plans with defined contribution plans in which employee must decide on the mix of investments. In today's world, the householder confronts lots of opportunities and financial product choices. Although having choices is nice, it is also a quite daunting task to select among them. How do households get the necessary knowledge and expertise to execute effective plans is a great matter of concerns? The approach to saving and retirement planning simply hands out all the parts of the task to householders. Investors must make all the decisions and assemble the product parts to minimize risk.

Review of Literature

Ranganathan, K. (2006) conducted a study to assess the awareness of mutual funds among investors, to identify the information sources influencing the buyer decision and the factors influencing the



THE IMPACT OF HUMAN RESOURCE MANAGEMENT CHALLENGES ON ORGANIZATIONAL PERFORMANCE

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Abstract:

Human resource management challenges plays a vital role in the success of the organization. The purpose of this study is to examine the impact of human resource management challenges on organizational performance as well as on job satisfaction. A total of 120 employees from software companies of Bangalore city are taken as sample. The survey is done with the help of a structured questionnaire covering all the HRM challenges. The findings suggested that management might be able to increase the level of the commitment in the organization by improving satisfaction with compensation, policies, and work conditions. Companies should involve their employees as they are viewed as an indispensable source of competitive advantage. One way of increasing the job satisfaction at the workplace is expanding the interactions level with employees in staff meetings and rising guided discussions of topics related to these issues. Open communication or information sharing promote fast decision making. It will influence commitment and job satisfaction among employees. If the employees are well aware of the organization environment, their duties, and objectives, they can perform their tasks, and it helps the organization to enhance their productivity. A highly committed and competent workforce allows companies gain a competitive advantage.

Keywords: Challenges, employee participation, compensation, employee job satisfaction, organizational performance.

Introduction:

Organizational performance directs towards the overall growth of an organization. Human resource is the most important asset in any organization. It is necessary for the organizations to manage their employees effectively and efficiently. Human resources play a vital role in any organization. It, thus, requires the considerable attention of the management so that employees can work up to their full potential. Human Resource means individuals or staff or workforce within the boundary of an organization they are responsible for performing the tasks assigned to them and they aim to meet the organization objectives and make the profit. Human resource can provide a sustainable competitive advantage by giving them different practices. A company's success depends upon the people who are working in the organization. Human resource considered more important asset in any organization. In any organization, the employees must be treated as a valuable asset; the organization's mission will be achieved in a better way if their skills would be developed. In the presence of the competitive environment, the success of any organization depends upon the capabilities and the caliber of their Human Resource to meet human resource challenges. If there are no human resource management challenges, then company always face the difficulties and not able to perform in the competitive society. Company current and potential human resources are essential considerations in the development and for the execution of its strategic business plan. Human resources include individuals, staff or workforce within or even outside the boundary of an organization who are responsible for performing the tasks assigned to them. The main aim of an organization's human resource team is to help the organization in achieving its objectives. Human resource helps the organization in making sustainable competitive advantage.

Literature Review

Bakker (2010) conducted a study to investigate and identify to what extent country differences are affecting the adoption and deployment outcomes of e-HRM and found that generally the role of country differences is suggested to be of no importance, regarding the e-HRM adoption and deployment outcomes. When investigating the featuring of HR processes in an e-HRM application, it was suggested that acquiring HR is likely to be coherent with local recruitment differences.

Shane (2009) conducted a study on Development and Validation of a measure that examines attitudes towards e-HRM Practices in South Africa with the main objective to investigate, analyze and evaluate attitudes towards electronic human resource management (e-HRM) tools within a large South African financial institution. This was done by developing and validating an instrument to determine e-HRM tool usage, e-HRM tool preference as well as attitudes towards e- HRM. A total of 104 HR

Managerial Competencies Analysis and Gap among Managers of Selected Textile Mills in Andhra Pradesh

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Abstract :

Competency may be defined as an ability of an individual to do a job properly. Competency Mapping is a process of identifying the gap of an individual's performance or job-related skills in order to fill those gaps through effective training. The primary aim of this Study is to ascertain the job-related competencies of managerial level employees and to determine the gap between the required and existing competencies of managerial level employees working in selected spinning mills in Andhra Pradesh. To achieve the objectives of the study the researcher has designed questionnaire (1-SDA to 5-SA) comprising 7 dimensions and the same was distributed to 231 managers based on simple random sampling. The collected data is codified, analysed with the help of Statistic Packing for social sciences (SPSS). The present study uses both descriptive and inferential statistics. From the results of multiple regression analysis, it is found that "adaptability" competencies, "initiative" competencies, "planning and organizing" competencies, "leadership quality" competencies are the most influenced on job performance.

Keywords : Adaptability, Competency, Initiative, Leadership Quality, Mapping, Planning, Organizing and Job Performance.

Introduction :

Textile sector in India is one of the prominent and oldest sectors in which has its own considerable contribution to the Indian economy in manufacturing which is around 10 per cent in the financial year 2017. In terms of exports, textile sector is having approximately 15 per cent of total exports, today, which indicates that it's the largest contributor. Further, the textile industry is the largest employment provider in the country and hence considered as labour intensive sector. According to The Cotton Textiles Export Promotion Council (Texprocil), the textile industry in India has earned US\$ 39.2 billion in 2017-18 through exports with a growth rate of 5.4 per cent. The textile industry can be broadly divided into two segments: unorganised and organised. The unorganised sector consists of handloom, handicrafts and sericulture, which are operated on a small scale and through traditional tools and methods and the organised sector consists of spinning, apparel and garments segment which apply modern machinery and techniques such as economies of scale (India Brand Equity Foundation Report, 2018).

The Indian textiles industry is extremely varied, with the hand-spun and hand-woven textiles sectors at one end of the spectrum, while the capital-intensive sophisticated mills sector at the other end of the spectrum. The decentralised power looms/ hosiery and knitting sector form the largest component of the Indian textiles sector. The close linkage of the textile industry to agriculture (for raw materials such as cotton) and the ancient culture and traditions of the country in terms of textiles makes the Indian textiles sector unique in comparison to the industries of other countries. The Indian textile industry has the capacity to produce a wide

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Outcome-based education: a paramount model for higher educational institutions in India

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History

Abstract

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Figures References Related Details

Abstract

In the year 2014, India became a full member of the Washington Accord that facilitates for accreditation process in engineering education system with desired policies and procedures. It signifies that our accreditation process in the engineering institutions is in full conformity with the requirements of the Washington Accord with the outcome-based education. This study supports to determine the challenges in the present engineering education and discusses the outcome-based education implementation in engineering institutions. At the end, this study reviewed the assessment approaches.

Keywords

engineering education, National Board of Accreditation, NBA, Washington Accord, outcome-based education, OBE, graduate attributes



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