

Conceptual Design and Preliminary Analysis of Turbo Jet Engine

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Abstract. The selection of aero-engine that can meet the design specifications of aircraft is the primary step to the overall design program of an aircraft. Global aviation traffic is expected to increase at an annual rate of 5% for the foreseeable future. However, the engine emissions such as CO, CO₂, UHC, and NO_x have greater adverse impact on the earth atmosphere and human health in addition to its performance degradation. Proper design of the aero-engine to the design requirements of the particular aircraft is essential for meeting the highly competitive airline market. Turbojet is an air-breathing engine which works under the basis of Brayton Cycle. The efficiency and thrust produced by the engine depend on the individual performance of the turbojet components such as Intake, Compressor, Combustion Chamber, Turbine, and Propelling Nozzle in addition to its various operating atmospheric conditions. Here, program has been developed to do a conceptual design of the aero-engine using MATLAB and also performance analysis chart will be developed for the aero-engine to meet the design requirements of the aircraft.

Keywords: Turbojet engine, MATLAB, emissions, thermodynamic analysis

1. INTRODUCTION

Since the introduction of the first operational jet engine, engine development has focused on larger engines to meet growing needs of thrust, SFC, specific thrust etc., Now a days there are numerous ideas to design an engine to increase the performance but before starting the process we are undergoing the conceptual design to analyze the performance characteristic to check the design satisfies our mission requirements. Conceptual design is the first step in the multiphase process involved in creating a new product. The conceptual design phase is performed next to the schematic design phase. In this process we are using multiple input parameters like operating altitude, Mach number & component efficiency like compressor ratio, turbine inlet temperature and mechanical transmission efficiency. To determine the compressor stagnation properties from compressor pressure ratio, work done on the compressor and isentropic efficiency of compressor and also find the turbine outlet stagnation condition by equating the work done on the compressor with work done by the turbine through mechanical transmission efficiency and turbine inlet temperature. The compressor exits stagnation condition, turbine inlet temperature and stagnation pressure loss in the combustor using to estimation of fuel-air through energy balance analysis. The above condition will then form the basis for the conceptual design of the component. Our motivation is to provide performance analysis data sheet using MATLAB for the various mission requirement which is used to find whether the engine design was efficient or not.

2. LITERATURE SURVEY

The availability of conceptual design analysis for turbojet engine from the literatures available is very minimal. In the printed versions there is a limited amount of text available on the drawing and detailed performance of a

Characteristics of Fuel-Air Mixing in the Subsonic Combustion Regime with Opposed Fuel Jets for Flame Stabilization

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Abstract. The main goal of this research is to examine the characteristics of fuel-air mixing and the creation of a recirculation zone at different fuel and air velocities using an opposed fuel jet method of flame stabilisation. Fluent (R1 2020) is used to model the fuel-air mixing characteristics for parameters such as velocity amplitude, static pressure, total pressure, and turbulence strength.

Keywords: Flame stabilization, combustion chamber, opposed jet, fuel-air mixing, subsonic, Fluent.

INTRODUCTION

The research on opposed jet flame holders began in the mid-1950s. The aim of the research was to find a way to keep flames stable in high-velocity combustible streams like those used in ramjets and afterburners. This flame stabilisation mode allows for more consistent burning and easier ignition. Although the opposing jet's ability to hold a flame was intriguing, no realistic applications have been published. It could be due to the jet system's increased weight and slightly higher air consumption. In recent years, opposed jets have been used in coal flame stabilisation and low NOx emission research.

Lean premixed combustion systems have prevented low flame temperatures and stoichiometry non-uniformities caused by incomplete fuel and air mixing. The aim is to keep peak flame temperatures below 1800 K, which reduces thermal NOx generation significantly. The operation of these premixed devices, on the other hand, can lead to undesirable phenomena such as auto ignition and flashback. High temperatures in a premixer caused by auto ignition or flashback can cause damage to an engine or cause it to shut down.

As a result, it's preferable if fuel and air can be pumped into the combustor separately and then easily combined before burning.

The most common approach is to carefully design the aerodynamics of burners and enclosures, which allows you to control mixing mechanisms and residence time. High-velocity coaxial air, for example, has been shown to reduce NOx emissions in hydrocarbon flames in jet diffusion flames [1-4]. The high-velocity coaxial air creates more shear, resulting in greater fuel-air mixing before combustion and shorter residence times, resulting in lower emissions.

Dilution of the reactants with cooled (inert) combustion products lowers the oxygen concentration before combustion and lowers the final flame temperature, resulting in a longer ignition delay [5-7]. With enough FGR, the combustion zone can be spread out over the entire mixing region rather than being contained in a thin front. In non-premixed systems, the increased ignition delay also gives enough time for fuel and air to combine before burning. As a result, there is a more consistent temperature distribution, which helps to reduce NOx levels. However, since



Effect of process parameters on machining behaviour using S/N ratio and ANOVA analysis

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Abstract

Inconel 725 super alloy is a significant and often used material for many technical applications such as oil and gas industries, aerospace, nuclear and marine areas owing to its exceptional physical and mechanical properties. The major drawback of utilizing this alloy is challenging it is to machine using traditional machining techniques. Production sectors often aim to produce goods with excellent surface finishes and high production rates at reasonable prices. Hence, in the current study deals with the effect of electric discharge machining (EDM) parameters viz. pulse-on time (T_{on}), pulse-off time (T_{off}) and discharge current (I_p) on metal removal rate (MRR) and surface roughness (Ra) of Inconel 725 alloy. According to the Taguchi's L9 orthogonal design the EDM studies were performed. The optimal condition of EDM parameters was obtained by signal to noise (S/N) ratio analysis with an aim was to minimize the Ra and maximize the MRR.

Taguchi analysis in investigation of feed force, cutting force and thrust force while machining aluminium metal matrix composite

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Metal matrix composite finds several applications in automotive and aerospace sectors because of its excellent mechanical properties and ease of machinability characteristics Taguchi analysis is used to investigate the cutting force, feed force and the thrust force while machining aluminium metal matrix composite. The analysis of variance (ANOVA) is used to investigate the experimental results and the parameters influencing the cutting force, feed force and thrust force in turning of aluminium metal matrix composite. Taguchi analysis is used and the response table for the feed force, cutting force and Thrust force is calculated and it is found the forces are highly influence by the steam pressure.

Keywords: Feed force, Cutting force, Thrust force, Metal matrix composite, ANOVA, Taguchi technique.

Introduction

Cutting force is the maximum force in machining operations and it is tangential to the rotating direction. The dynamometers are embedded between the tool and turret head and it is mounted on the tool turret head with an adapter. The measurement of cutting force is helpful in analysis of chip formation, identification of wear processes, understanding materials behavior, identification of optimum process parameters and machine abnormalities. Ultrasonic assisted turning aluminium metal matrix composite is demonstrated and it is concluded that the reduction in cutting force will improve the surface finish of the turning process [1]. The machinability studies of the aluminium metal matrix composites are investigated for its usage in several engineering industries due to its increase mechanical properties [2]. Response surface methodology is used to assess the cutting forces in turning aluminium metal matrix composite. Desirability function analysis is employed to determine the optimal machining parameters that influence better surface finish and tool wear [3]. The machining of metal matrix composite with HSS and copper is conducted to evaluate the tool wear, surface roughness and thrust force. Stir casting process is used to fabricate the metal matrix composite and the turning operation is performed using a CBN tool insert. The responses are assessed and ranked for

the individual response and combination of all responses [4]. The investigation of cutting forces for metal matrix composite is done using a novel technique TOPSIS. The composite are prepared with 90% weight proportion of aluminium and 10% of silicon carbide. L27 orthogonal array is used to conduct the experiments and the optimal machining levels are determined [5]. The machining of metal matrix composite using uncoated tungsten carbide inserts is discussed. It is found that when the cutting speed is 600 m/min, the surface roughness brings very low values and it is found to be optimal. Also it is reported that during the high cutting speed, built up edges are generated on the cutting tool [6]. The comparative study of cutting forces in metal matrix composites is done and it is reported that the composite containing silicon carbide alone will experience high cutting force when compared to others [7]. Several Optimization techniques such as Grey relation analysis are demonstrated to determine the optimum machining characteristics of the composite laminate [8-10]. The steam is used as a coolant in turning metal matrix composite [11]. Today's technological advancement has paved the simplest method to the use of eco-friendly resources giving more importance to the plants origin thereby ecological balance is obtained. An Eco-friendly resource leads to better properties than the individual components. The composite is manufactured under the mixture of reinforcement phase and matrix phase. Metal matrix composites are inexpensive and lighter in weight, little density, extraordinary toughness, and bio-degradable. So the usages of Aluminium metal matrix composites

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Investigations on the wire EDM characteristics of Al matrix composite using TOPSIS method

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Abstract

This study deals with wire electrical discharge machining (WEDM) of alumina (Al_2O_3) reinforced AA6063 matrix composite using a brass wire electrode to analyze the two important characteristics concerning material removal rate (MRR) and surface roughness (Ra). Nine combinations of experimental runs are performed by taking three input parameters (peak current (I_p), pulse-on time (T_{on}) and pulse-off time (T_{off})) based on Taguchi's design of experiments. In addition, Technique for order preference by similarity to ideal solution is employed for multi-response optimization. Thereafter, analysis of variance (ANOVA) is employed to determine the influence of parameters on responses. From TOPSIS results identified that the optimal parameters for obtain the higher MRR and lower Ra are ' I_p ' of 20A, ' T_{on} ' of 100 μs and ' T_{off} ' of 30 μs , respectively. ANOVA result revealed that ' T_{on} ' has the main significant factor (42.40%) in enhancement of MRR and deprivation of Ra, followed by ' I_p ' (28.53%) and ' T_{off} ' (16.63%), respectively.

DESIGN AND DEVELOPMENT OF A SMART ROVER WITH COMPUTER VISION FOR IMPAIRED NAVIGATION ASSISTANCE FOR VISUALLY IMPAIRED INDIVIDUALS**Dr.D. Deepak¹, M. Sathya², A. Srija³, V. Thamizh⁴**¹Associate professor, Paavai Engineering College, Nammakal.²UG, Aeronautical Engineering, Paavai Engineering College, Nammakal.³UG, Aeronautical Engineering, Paavai Engineering College, Nammakal.⁴UG, Aeronautical Engineering, Paavai Engineering College, Nammakal.

Abstract— This paper reports the consequences of a global review in a few distinct nations on the mentalities, prerequisites and inclinations of visually impaired and outwardly weakened individuals for a mechanical aide in air terminals. A brief synopsis of previous research on robotic travel aids and other mobile robotic devices serves as the survey's introduction. The survey involves three segments on private data about respondents, existing utilization of portability and route gadgets, and the capabilities and different elements of a mechanical aide. The study discovered that respondents were exceptionally keen on the mechanical aide having various capabilities and being helpful in a large number of conditions. They didn't like any of the designs that were suggested, but they thought the robot's appearance was very important. According to their comments, respondents desired the robot to be discreet and inconspicuous, lightweight, portable, easy to use, long-lasting, resistant to damage, and requiring little upkeep.

Keywords— **Robotic Guide, Obstacle avoidance, low cost, Raspberry pi.**

I. INTRODUCTION

A robot with Raspberry Pi sensors can be a useful tool for helping people who are blind in an airport. The robot can utilize its sensors to distinguish hindrances and guide the individual through the air terminal, furnishing help with route and wayfinding.

To avoid collisions and detect obstacles, the robot can be outfitted with various sensors, including ultrasonic and infrared ones. It can also use a camera to recognize and understand signs, guiding the user through the airport to the appropriate terminal, gate, or baggage claim area.

Using voice commands or a tactile interface, the robot can communicate with the person, offering guidance and assistance as required. The Raspberry Pi board gives the essential figuring ability to handle sensor information and control the robot's developments.

As a whole, a robot equipped with Raspberry Pi sensors has the potential to significantly enhance the travel experience of people who are blind in an airport by providing them with a reliable and effective method of assistance and navigation.

Robots equipped with Raspberry Pi sensors can be programmed to detect obstacles in the environment and alert the user through sound or vibration feedback. They can also be programmed to follow a specific path, which can be very helpful for guiding the user through an airport or other unfamiliar environment. In addition, robots can be equipped with cameras that provide real-time visual information to the user, which can be especially helpful in identifying landmarks or finding their way around complex environments. Moreover, robots can also be equipped with natural language processing capabilities, enabling them to communicate with the user and respond to voice commands. This can make it easier for the user to interact with the robot and receive the information they need in a more natural and intuitive way. Overall, robots using Raspberry Pi sensors can be very helpful for blind people, providing them with greater independence and improved access to information in complex environments like airports. However, it's important to note that robots cannot replace the human interaction and support that some blind people may require, and it's essential to ensure that the technology is designed with the needs and preferences of the user in mind.

Robots using Raspberry Pi sensors for obstacle avoidance are becoming increasingly common in a variety of applications. These robots typically use a combination of sensors, including ultrasonic



SEMI-AUTOMATIC PLANT TRANSPLANTER

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Abstract: In contrast to direct field seeding, transplanting entails relocating a plant from a greenhouse or plant-bed environment to a field environment. Even though in the previous 20 years, mechanical transplanting technology has advanced, the development of a low-cost semi-automatic single-row transplanter is made possible using mulch beds and ridges. It has a delivery pipe, a frame, wheels, a hand pull valve, a compressor, a jaw assembly, and a pneumatic cylinder. It is the tool that aids in placing seedlings at the proper depth and at predetermined intervals. Additionally, it provides proper compaction over the plants and covers the seed with soil. Because the product's planting accuracy is higher than that of manual transplanting, it is found to be more suitable for transplanting vegetables than the conventional method. This lessens the need for labour, which has been the main driver of mechanization. Due to their large related expenses, automated machinery is, however, out of reach for low-income farmers. To meet the objectives, this project designed and built a semi-automatic plant transplanter. The use of a method like this for field transplanting can help commercial vegetable crop farmers technologically.

Index Terms – transplanting, semi-automatic, pneumatic, jaw assembly, manual.

I. INTRODUCTION

It is a matter of pride to place it on record that during 2021-22 horticulture sector in the country recorded production of 331.05 MT which is the highest ever in the history of Indian Horticulture. India retains its position as the 2nd largest producer of Fruits and Vegetables globally. This demonstrates the willingness and risk-taking entrepreneurship of Indian farmers to accomplish the task of production perishable horticulture produce and contribute towards food and nutritional security of the Nation. Nursery is consequently the basic need of horticulture. Plant propagation techniques and practices are the core of horticulture nurseries. The planting materials for horticultural plantations are raised from seeds and vegetative parts. Mother plants play a very vital & primary duty. The mother plant's health and veracity determine the nursery's future. A successful nursery owner does not rely on others to obtain mother plants. Both stock and scion require mother plants. Mother plants should be chosen based on their genetic characteristics as well as other elements like availability and environmental adaptation. Transplanting is removing an actively growing plant from one place and planting it in another for further growth and production. When the seedling is strong enough to withstand such shocks and when the environment is conducive to an easy transition to the new location, this operation may be carried out. Seeds of some crops, such as wheat, rice, jute, sun hemp, mustard, sesame, linseed, groundnut, gram, pea, lentil, soybean, spinach, etc., are directly sown in the main field, but seeds of some crops such as rice, vegetables, seasonal flowers, etc. are sown in the nursery bed. In India, the maximum number of farmers who grow vegetables are using traditional practices. But nowadays manual (Handheld) and semiautomatic transplanters are also used for transplanting vegetable seedlings. Most farmers have small

Experimental Investigation on Hybrid Fibre Reinforced Self Compacting Concrete

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ABSTRACT - This project deals with properties of fresh and hardened self-compacting concrete reinforced with a combination of steel and sisal fibers as Hybrid fiber. Two percentages of sisal fibers (0.5%, 1%) are mixed with a uniform 0.4% and 0.8% of steel fibers. Flow properties, Compressive strength and Split tensile strength are evaluated at 7 days and 28 days for various specimens of self-compacting concrete. The experimental results concluded that the sisal fibers have a good capacity of using it as a reinforcement material along with steel for self-compacting concrete mix. In the flow/passing experimental techniques like the Slump Flow, T500mm Slump Flow, V-Funnel Test, J-Ring Test, L-Box Test and T5min V-Funnel Test, the concrete mix design with a lower fiber content of sisal fibers with steels proves to be beneficial for the workability of concrete. The experimental results was observed that high concentration of steel along with sisal fibers in self compacting concrete improves the compressive strength of 28 days are 29.33, 30.22, 30.67, 31.11, 32 N/mm² and split tensile strength of 28 days are 3.74, 3.89, 3.96, 4.03, 4.17 N/mm²

Keywords: Hybrid fiber, sisal fiber, self-compacting concrete,

I. INTRODUCTION

Over the last decades, Self-Compacting Concrete (SCC) is an essential advancement in concrete technology, since it moves based on its weight without the demand for vibration in narrow areas and complexity of the formwork relative to the conventional concrete. The SCC was proposed for the first time in 1986 by Professor Hajime Okamura, but

the first time in 1986 by Professor Ozawa in Japan. Due to its broad applicability, SCC has been investigated in various countries, including the USA, Japan and Canada for its potential in structural engineering and constructions. SCC provides several benefits, such as easy production, high productivity and high structural consistency. The Self Compacting Concrete mixture of fibrous steel exhibits better efficiency in comparison with standard vibrated concrete in fresh and hardened states owing to the inclusion of fibers.

II. MATERIALS AND METHODS

2.1 CEMENT

World production is about four billion tons per year, of which about half is made in China. If the cement industry were a country, it would be the third largest carbon dioxide emitter in the world with up to 2.8 billion tones, surpassed only by China and the United States. The initial calculation reaction in the production of cement is responsible for about 4% of global CO₂ emissions. The overall process is responsible for about 8% of global CO₂ emissions, as the cement kiln in which the reaction occurs is typically fired by coal or petroleum coke due to the luminous flame required to heat the kiln by radiant heat transfer. As a result, the production of cement is a major contributor to climate change. Cement is a finely pulverized material which by itself is not a binder, But develops the binding property as a result of hydration. Scope for Silicon di-Oxide as reinforcement



STRENGTHENING OF RC BEAM WRAPPED WITH KEVLAR FIBER

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ABSTRACT

Over the asset's life cycle, sustainability involves the preservation of infrastructure against any sort of deterioration. Localized damage received under high loading situations such as earthquakes, hurricanes, or tsunamis can cause reinforced concrete (RC) infrastructure to deteriorate. Furthermore, factors such as rebar corrosion or age may cause an RC column's capacity to deteriorate or decline, needing prompt reinforcement to either prolong or guarantee its intended life is not limited. Strengthening existing members to carry maximum loads or meet particular serviceability standards is one way to improve the qualities of reinforced concrete beams. The emergence of sophisticated composite materials, notably adhesive-bonded Kevlar fibre as externally bonded retrofit materials, has provided several benefits in structural engineering (i.e., corrosion-free, excellent strength to weight ratio, ease for site handling, flexibility to conform to any shape). The use of Kevlar fiber laminates in the structural repair and retrofitting of reinforced concrete members becomes a great deal of research work nowadays. This research work deals with the performance of reinforced concrete beams laminated with Kevlar fabric layers by an epoxy bonding agent under a two-point concentrated loading system. The study focus the effect of Kevlar fiber laminates improving the strength of the reinforced concrete beam will be investigated.

Keywords: beam wrapped

1. INTRODUCTION

Problems with reinforced concrete cause structures to degrade. Natural disasters such as earthquakes have repeatedly proved the sensitivity of existing structures to seismic impacts, emphasising the importance of rehabilitation of degraded structures in seismically active areas. As a result, one of the most critical tasks in civil engineering is retrofitting and reinforcing existing reinforced concrete structures. An engineer is frequently confronted with issues relating to retrofitting and strengthening an old building. As an example, how to build a robust structure. Because concrete is the world's most widely used man-made construction material. It's made by combining cementing materials, water, aggregates, and occasionally admixtures in the proper proportions. Concrete has a great compressive strength, is inexpensive, and has good flexibility. And how to modify the use of a structure, design code rules, and seismic retrofitting are some of the factors that contribute to the necessity for existing structure rehabilitation retrofitting. If upgrading is a possible option, complete replacement of the current structure may not be a cost-effective choice and may become a

financial burden. Repair and rehabilitation are the most prevalent remedies in such situations.

The main objectives of this study are,





1. To study the mechanical properties of conventional concrete structure and compare with Kevlar fibre wrapped concrete beam.
2. To determine the flexural strength of Kevlar fibre reinforced concrete beam.
3. To compare the flexural behaviour of Kevlar fibre reinforced concrete beams with conventional concrete structure.

2. BACKGROUND

Fasil Mohi ud din (2017) The study's major goal is to determine the mechanical qualities and compatibility of fibre so that it may be utilised in concrete to improve its properties and durability. The specific tensile strength of both K29 and K49 is 8 times more than that of steel, making it both strong and light. It does not melt, unlike other plastics, and can withstand temperatures of up to 450°C (800°F). Kevlar can

Research Article

Study on Performance of Infilled Wall in an RC-Framed Structure Using a Reinforcing Band

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Infilled wall is a primary structure which is used in a multistorey RC-framed structure. It is not designed like structural elements, but it is subjected to structural load and response as a heavily damaged element into the building. The main problem of an infilled wall is not actively utilizing in the framed structure and it is not interacted with frame elements. The objective of research is to utilize the infilled wall in the RC-framed structure by improving its performance of behavior. Here, two different types of brick masonry like Autoclaved concrete and clay brick masonry were used as the infilled wall in an RC-framed structure. A singly bay and single storey RC framed structure was cast and tested under a 1/10th scale model by diagonal compressive loading. The specimen was subjected to static loading by a universal testing machine. Infilled wall is weak in tension, so a reinforcing band was used to improve the performance like load carrying capacity, stiffness, ductility, and energy dissipation capacity. Based on the results of the experimental study, it is found that reinforcing band with the infilled wall gives better behavior of the RC-framed structure.

1. Introduction

At present, the development of tall construction is necessary to avoid more utilization of land area for building up the structure in the urban community [1, 2]. At the same time, the effects of earthquake in tall structures have been severely damaged due to out of uncontrolled lateral displacements and it makes serious damages to the structural elements [3, 4]. Structural construction with infilled frames has induces more trouble with the recommended resources of lateral load [5, 6]. Normally, all type of framed structures

consisted of structural and nonstructural elements [7, 8]. In that, masonry infilled walls are recommended as a non-structural member for separating the rooms and living can be proficiently used in combination with a framing system [9, 10]. Although, these nonstructural boundaries of unreinforced masonry walls are imperfect in shear and tensile strength and it is brittle mannerism, inconceivable damages are exposed at time of loading [11, 12].

The lateral strength of infilled frames with variation of infill wall thickness and it was proved that these frames more lateral strength than bare frame [13, 14].

BEHAVIOURAL ANALYSIS OF RCC BUILDING ELEMENTS USING ETABS

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Abstract

A building has different RC structural elements like beam, column, slab, wall and footing. In modern days, the buildings are made to fulfil basic aspects and better serviceability. In order to find that, many soft wares according to our perspectives are used, here the software called ETABS (Extended Three Dimensional Analysis of Building System). This paper's main aim is to identify the behaviour of RC building elements under loading conditions. The RC elements- beam, column, slab and wall are designed and modelled and while designing different loading are applied in uniform pattern and thus the behaviour of the elements are analysed using the ETABS software.

Keyword

ETABS, behaviour and analysis of beam, column, slab, wall.

Software used

ETABS, Auto CAD

1. Introduction

Structural engineering is a wider discipline under the field of civil engineering. It is a vast topic with unlimited theories and practices. It's a field that is still developing with huge innovations and ideas. The present project deals with the analysis of RC structural elements – beam, column, wall and slab and its structural behaviour when applied to different loading condition. So that the structural behaviour – deflection, moment, and its stress, strain behaviour will be studied.

Analysis of the structure is presently carried out by the software called ETABS, SAP, STAAD, etc. As years pass new software are developed for analysis of structures at different condition of loads the results can be understood and interpreted from the software to know the validity of values provided as outputs. In here, we are using ETABS software for studying the structural behaviour of the structural elements.

RC structural elements which are analysed here are beam, column, slab and wall. These are the basic

elements which are combined to form the whole structure. The behaviour of the structure can be identified or studied by referring its deflection, moment and its stress-strain. The loads which are applied are its self-weight and live load from 0KN to 30KN gets simultaneously increased by 2KN. By those structural behaviour of the elements can be further studied.

By steady application of loading, the behaviour of the structure will lead to deflection resulting in initial crack formation likewise the load will be applied till the structure fails. Due to the crack formation, the crack pattern of the elements and its stress strain can be analysed. This paper's ultimate aim is to analyse and study the structural behaviour using software.

1.1 Literature review

[1]. Uma M and Nagarajan (2016) have investigated the optimum structural configuration of a multi storey building by changing the shear wall location. It was concluded that the shear wall placed at the corner of the building shows less displacement and drifts and thus considered as optimum location. It was also shown that the performance of the building is also depending on the material of the shear wall

[2]. Lavanya C.V.S., Pailey Emily. P and Sabreen M (2017) have presented multi-storeyed Residential building analysed and designed with lateral loading effect of earthquake using ETABS. They have designed as per Indian Codes- IS 1893:2002 (Part-1) and IS 456:2000. It was concluded that there is a gradual increase in the value of lateral forces from bottom floor to top floor in software analysis

[3]. Mallikarjun M. and Surya Prakash P. V. (2016) have studied the analysis and design of a multi storied residential building of (B-2+G+10) by using most economical column method in ETABS. It was concluded that the design of the structure in an economical way by reducing the sizes in the sections. It is also concluded that the height of the structure is increased; the stiffness phenomenon (slenderness effect) i.e. long column effect will come in to the picture. As a result the amounts of deflections are far greater than the codal provisions (IS – 456:2000).

Leachate transport phenomenon on groundwater quality: modeling using modflow and MT3DMS tools

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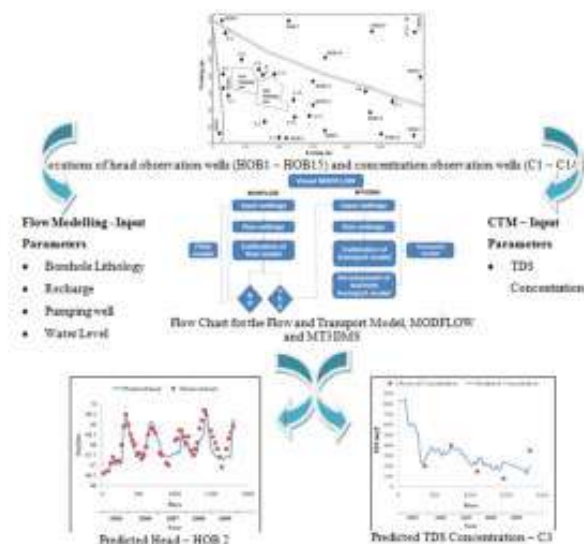
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Graphical abstract



Abstract

The dumping of solid waste in uncontrolled landfills can cause significant impacts on the environment and human health. The open dumps cause the formation of leachate which contaminated the groundwater; use of this groundwater reported danger to the human health. The goal of groundwater protection is necessary to control the release and migration of pollutants from the leachate in the subsurface. In this paper, the above-mentioned problems were dealt with the case study of Ariyamangalam open dumping site, Tiruchirappalli, Tamilnadu. The dump site receives 71% of organic waste. The groundwater flow and leachate transport model was developed using Visual MODFLOW and MT3DMS (Version 4.3), to study the leachate transport in the subsurface and to predict the plume behavior under different scenarios. The conceptual model of the system was derived from the information on geology, geo physical and geo hydrology of

the study area. The total dissolved solids (TDS) were taken as a parameter, to study the extent of contaminant plume for the next nine years (2014-2022). From the groundwater flow model, it was found that the increase in water level by 2.5 m above MSL from December 2010 (70.9 m above MSL) to December 2022 (73.4 m above MSL) around the study area. From the leachate transport model, the predicted TDS plume movement was identified towards the west and southeast directions of the open dumping area. As a conclusion, the developed groundwater flow and leachate transport model can be effectively used for studying the leachate migration from the open dumping site into subsurface system.

Keywords: Solid waste; open dumping; leachate; total dissolved solids; visual MODFLOW

1. Introduction

In recent years solid waste management creates a serious issue due to an increase of the urban population in developing countries (Ghose *et al.*, 2006). Numerous reports stated that nearly 90% of generated Municipal Solid Waste (MSW) is disposed on the open lands in low lying area, which creates serious trouble to the public health and the environment (Dong *et al.*, 2008; Shivayogimath *et al.*, 2007; Sharholy *et al.*, 2008). Management of leachate generation and its transport make a dangerous problem to the surrounding soil, ground and surface waters (Baccini *et al.*, 1987; Jhamnani and Singh 2009; Kanmani and Gandhimathi 2013 a). Currently there has an increase in the contamination of groundwater occurred by the disposal of solid waste in landfills (Mor *et al.*, 2006; Singh *et al.*, 2008; Rahim *et al.*, 2010). Paliya *et al.* (2022) conducted research on the disposal of polybrominated diphenyl ethers (PBDEs) at municipal solid waste (MSW) dumping site, Nagpur, India. The study found that the MSW disposal locations in India are PBDE sinks and may be harmful to human health. Leachate transport on groundwater continues to raise

Experimental Investigation and Flexural behavior of Reinforced Geo polymer Concrete Beam by RCA

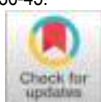
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Abstract: This research report presents the study on material characteristics of GPC by using natural aggregate and Recycled Coarse Aggregate. Experiments were conducted on the effect of variation of alkaline solution and different molarities on the mechanical properties of GPC. The alkaline liquid used for the present study was sodium silicate and sodium hydroxide solution with varying ratios of 2, 2.5 and 3. The molarities chosen for the sodium hydroxide solution were 8M, 10M and 14M. The test specimens were 150mm size cubes and 100x200mm cylinders heat-cured at 60°C in an oven. The compressive strength was about 18 to 39 MPa and split tensile strength was in the range of 3 to 3.8 MPa respectively. In this investigation on GPC using RCA, a total of 9 mixes were cast and tested, out of which three were conventional concrete mixes and six GPC mixes having varying combinations of fly ash, GGBS and RCA. The test specimens were 100mm size cubes and 100x200mm cylinders cured at 90°C in an oven for 18 hours. Further size 150mm GPC cube specimens were cured at ambient temperature conditions. The studies showed that the compressive strength and split tensile strength of different mixes decreased with the increase in the percentage of recycled coarse aggregates.

1. INTRODUCTION

It is widely known that the production of Port land cement consumes high energy and contributes large quantities of CO₂ to the atmosphere (Madheswaran C. K. 2013). However, cement concrete is the most commonly used construction material in the world due to its strength, durability and availability. Geo polymer concretes (GPC) are inorganic polymer composites which can be used for environmentally sustainable construction. The term Geo polymer was first introduced by Davidovits in 1978 (Shankar, H. Sanni, 2012). In terms of reducing global warming, the geo polymer technology can reduce, reducing CO₂ emission in to the atmosphere, caused by cement and aggregate industries by about 80%. To produce the binding material in this technology, through the process of geo polymerization the source material that is rich in silicon and Aluminium is reacted with a highly alkaline. Geo polymer describes a family of mineral binders with a polymeric silicon-oxygen-aluminium framework structure. Industrial waste products such as fly ash, slag, red mud, rice-husk ash and silica fume can be used for the synthesis of geo polymers. Geo polymer concrete are high strength and increase in compressive strength with increase in percentage of fine and coarse aggregates up to the optimum level. The geo polymerization process involves a substantially fast chemical reaction and every material used in geo polymer has its own function and role to create a chemical reaction and mechanism. The strength properties of Fly Ash and GGBS based Geo polymer Concrete were cast and cured for different curing periods namely 7, 14, 28, 56 and 112 days. The GGBS blended Fly ash based GPC mixes attained enhanced mechanical properties at ambient room temperature curing without the need of heat curing. Using 100% fly ash decreases strength and the cost is also low compared to the 50% GGBS & 50% Fly ash. The fly-ash based Geo polymer concrete curing temperature plays an important role in gaining strength. Curing was done by wrapping with plastic bag better compressive strength was obtained as it preserves the moisture. The mechanical properties of the concrete concluded that higher concentration of sodium hydroxide solution and higher ratio of alkaline solution results in higher compressive strength. The compressive strength was observed when Geo polymer concrete was exposed to a temperature of 500°C for two hours and 90% of compressive strength was achieved in 14 days. In order to improve the workability of fresh concrete, high-range water-reducing naphthalene based super plasticizer is added to the mixture. The dosage of super plasticizer also has an effect on the compressive strength of the concrete. Super plasticizer, it substantially improves the workability without increasing the amount of water and hence reducing the risk of segregation. Various other super plasticizers, which can be used, are categorized as (i) Super Plasticizer A (Naphthalene Formaldehyde Condensate) (ii) Super Plasticizer B (Sulphonated Melamine Formaldehyde Condensate) (iii) Super Plasticizer C (Aqueous Dispersed Polycarboxylate) (iv) Super Plasticizer D (Aqueous Solution of Ligno Sulphonate) The main chemical base is Modified Naphthalene Formaldehyde and the dosage varies from 0.6 to 2% of the weight of fly ash.

The main objective of the work is to study the material characteristics of Geo polymer concrete by using natural aggregate and recycled coarse aggregate. The effect of alkaline ratio for different molarity of sodium hydroxide in Geo polymer concrete. The split tensile strength test and Compression test on Geo polymer concrete using Flyash, GGBS and Recycled Coarse Aggregate, to understand chloride permeability of GPC and water absorption of GPC.



Treatment of Textile Waste Water using Activated Carbon Prepared from Pumpkin Peel

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ABSTRACT

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Now-a-days the pollution has been major challenging issues to the environmental engineers. Waste management and pollution control is a great environmental concern, hence research activity is needed to utilize the solid waste or convert it to a useful product. Utilization of AC to treat various pollutants present was undertaken. Process economy mainly depends on the selection of raw material and method of preparation of AC. To study the effects of activated carbon preparation variables, which were the activation temperature, activation time, chemical impregnation and particle size and the effect of various chemical activating agents on the porous characteristics of activated carbon.

Keywords- Pumpkin Activated Carbon, Pumpkin peel, Phosphoric Acid

OBJECTIVE

- To prepare activated carbon from waste material such as Pumpkin peel & seed.
- Comparison of adsorption capacity from various activation method.
- To study the influence the factor such as pH, temperature, contact time, concentration of heavy metals, agitation speed.
- After the treatment the water can be used for irrigation and discharge into surface sources.

I. INTRODUCTION

The Textile Wastewater has been a major challenge today due to the contaminants from natural and manmade origins that are hazardous to human health. Among various treatments used, activated carbon is a

powerful adsorbent due to large surface area and pore volume that can be used for treatment process (Hassler, John -1974, Ramakrishna Gottipati, 2012). Commercial activated carbon is a preferred adsorbent for the removal of pollutants from the aqueous phase; however, its widespread use is restricted due to the



Investigation on the Strength and Behavior of Cold-Formed Steel Angle Columns

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Abstract: This article investigates the numerical and theoretical study on the buckling behaviour of cold formed steel lipped angle columns under pinned end conditions. The sections were analyzed using ABAQUS software. Geometric and material non linearities were included in the model. Parametric study was conducted by varying the thickness and length of the specimens. Three types of sections were chosen for this study based on the geometric limitations for the prequalified sections provided in the North American Specifications for Cold formed steel structures (AISI S100 – 2007). The Analysis was conducted on 24 specimens. All the specimens were failed under the combination of Local and Distortional Buckling. Theoretical study was carried out using Direct Strength Method as per North American Specifications for Cold formed steel structures. The Numerical results were compared with the Direct Strength method. Based on the comparison of results suitable recommendations were suggested in the direct strength method.

Keywords: Cold formed Steel, Finite Element method, Direct Strength method.

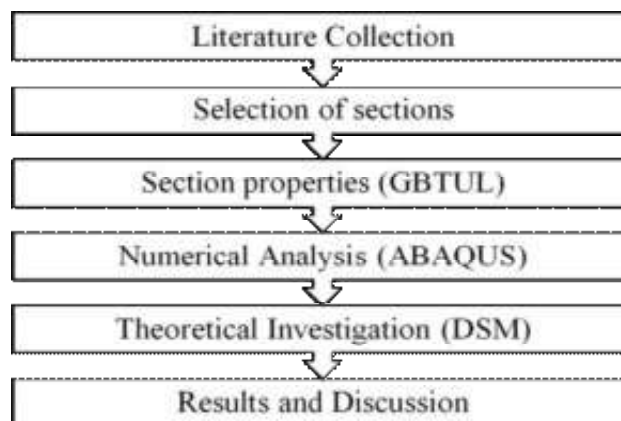
I. INTRODUCTION

Cold formed steel sections are thin sections made out of thin sheets of steel by rolling or press braking method in cold state. These sections are having uniform thickness. These sections are also called Light Gauge Steel Sections or Cold Rolled Steel Sections. Cold formed steel is used as secondary structural members like purlins and girts. Cold formed steel sections are thin in cross section and fails by buckling prior to yielding. Different modes of failure are observed in cold formed steel like local buckling, distortional buckling and lateral distortional buckling.

II. OBJECTIVE OF STUDY

- 1) To examine the buckling behaviour and load carrying capacity of cold formed steel plain and lipped angle columns under axial load.
- 2) Three types of angle sections were chosen by varying thickness and length.
- 3) The material properties of the angle section were found by GBTUL.
- 4) The ultimate load carrying capacity is to be compared with theoretical investigation done using Direct Strength method.

III. METHODOLOGY



EVALUATION OF RESIDENTIAL BUILDING BY USING MICROSOFT EXCEL

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ABSTRACT

This project is dealing with plan and estimation of residential building. we had revise finished (G+1) Building, In ground floor is finished with the hall ,kitchen, bedroom with attached bathroom, car parking and the first floor is finished with kitchen , bathroom and bedroom and its estimation is near 2,25,000 and estimation include earthwork excavation Sand filling , P.C.C in cement concrete with 1:5:10 mix , R.C.C in cement concrete with 1:2:4 mix ,superstructure, elevation work.

Keywords: Spreadsheet, Estimation Of Finished Project.

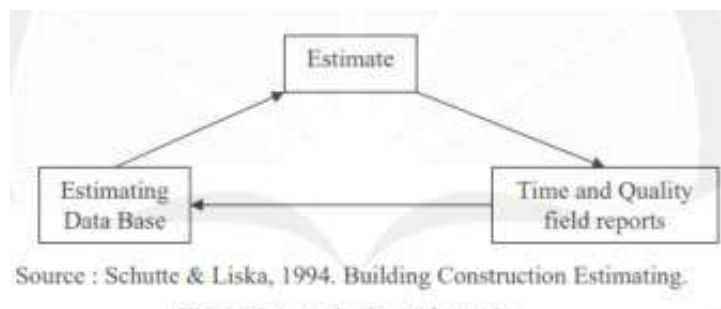
I. INTRODUCTION

Building construction estimating is the determination of probable construction costs of any given project. Many items influence and contribute to the cost of a project; each item must be analyzed, quantified, and priced. Because the estimate is prepared before the actual construction, much study and thought must be put into the construction documents. The estimator who can visualize the project and accurately determine its cost will become one of the most important persons in any construction company. For projects constructed with the design-bid-build delivery system, it is necessary for contractors to submit a competitive cost estimate for the project. The competition in construction bidding is intense, with multiple firms vying for a single project. To stay in business, a contractor must be the lowest-qualified bidder on a certain number of projects, while maintaining an acceptable profit margin. This profit margin must provide the general contractor an acceptable rate of return and compensation for the risk associated with the project.

II. LITRATURE REVIEW

A. Sources of Information For the Estimator

The best information source for the cost estimator is a company that has had past experience. Why is that? Because accurate work pricing system would be preserved. Information on the actual quantity of material specified, the amount of labor accurate or work hours, and hours of the actual equipment required to perform each task is invaluable information for the estimator and project control processes. It is important that the actual basis of information received to develop data container information for the estimator (Schutte & Liska, 1994)



B. COST ESTIMATION

Prepare cost estimates of materials and equipment purchases are very complex, ranging from creating specifications, looking for the source, conducting an auction or tender, until to pay the cost / price. There are various alternatives available to these activities, so that when less precise handling can cause project costs to be uneconomical.



Study on Mechanical Properties of Concrete by Partial Replacement of Cement with Polyvinyl Chloride Powder from waste materials

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ABSTRACT: Concrete is the most widely used building material. It is versatile, has desirable engineering properties, can be moulded into any shape, and more importantly, is produced with cost effective materials. The main constituents of concrete are Fine Aggregate (20-30%), Coarse Aggregate (40-70%), Cement (5-15%), Water(5-20%) and they are responsible for the main properties of concrete such as air content, fluidity, strength, setting time, and durability. Though, several materials are used to manufacture good quality concrete. It is important to know the properties of cement, aggregate and water, as they impart strength and durability to concrete. Of all the materials that influence the behaviour of concrete, cement is the most important constituent, because it is used to bind sand (F.A) and it resists atmospheric action. The global production of cement is approximately 1.5 billion tons per year. As they are produced by consumption of raw materials like limestone (CaCO_3), sand (SiO_2), shale clay (SiO_2 , Al_2O_3 , or Fe_2O_3) and iron ore (Fe_2O_3). Thus obtained from naturally occurring limestone, chalk, marble, lime sand shell deposit, lime sludge, clay, shale, tuff ash, shale, glass. So, they need also to be conserved for future generations for their requirements. And we, our present generations are facing a challenging pollution problems. So incorporating the pollutants in the manufacture of cement will drastically reduce the affects of pollutants caused by environment. Plastics in the form of PVC are major used all over the environment, so as to reduce its impact of pollution on environment and to conserve the natural materials used in production of cement we have to find an alternative material for Cement in construction works. Our project aims to attempt the PVC as a replacement for cement. Concrete design mix is designed and adding PVC as a partial replacement for cement in the proportions of 2.5%-10% in the increments of 2.5%. Mechanical strength parameters such as Compressive Strength and Split Tensile Strength of specimens are compared with that of the conventional concrete specimens. Eventually the optimal percentage of PVC replacement will be arrived.

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I. GENERAL

Concrete is the most widely used building material. It is versatile, has desirable engineering properties, can be moulded into any shape, and more importantly, is produced with cost effective materials. The main constituents of concrete are Fine Aggregate (20-30%), Coarse Aggregate (40-70%), Cement (5-15%), Water(5-20%) and they are responsible for the main properties of concrete such as air content, fluidity, strength, setting time, and durability. Though, several materials are used to manufacture good quality concrete. It is important to



An Experimental Investigation On Internally Cured Concrete

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Abstract : Water is becoming more and more limited, thus there is an urgent need for research on water-saving techniques when producing concrete and construction materials. Curing is the process of maintaining adequate moisture in concrete during its early phases to attain the required characteristics. However, excellent restoration is typically not practical. Substantial relief contributes significantly to the development of the substantial microstructure and pore structure and subsequently improves its execution and solidity. Attempts have been made to create internal-curing concrete using PEG-400 polyethylene glycol in light of this. In this experimental work, the strength of concrete of equal strength cast using the self-curing agent PEG-400 and conventionally cured Normal Strength Concrete were compared to each other. For the usual strength inner restoring cement of grade M20, IS approach for mix configuration was used, and for M50 grade of cement, experimentation-based planning is planned. PEG-400 trial doses of 1%, 2%, and 3% by weight of cement were used to create and evaluate internal-curing concrete. Following the adoption of the new technique, it was seen that the amount of water needed for curing was dramatically and completely decreased.

I.INTRODUCTION

In this experimental work, the strength of Normal Strength Concrete that had been conventionally cured and High Strength Concrete that had been cast with the self-curing chemical PEG-400 were compared to concrete of the same strength. IS mix configuration technique was used, and plans for M50 grade cement are based on experimental data for the usual strength inner restoring cement of grade M20. For the purpose of producing internal-curing concrete, trial doses of PEG-400 of 1%, 2%, and 3% by weight of cement were used. After using the new technique, it was seen that the amount of water needed for curing was dramatically 100 percent less. Making sure that the early phases of the concrete have enough moisture for it to develop the required qualities is the process of curing concrete. Because when cement is combined with water, the hydration process takes place, which requires water for cooling. The cement will shrink if water isn't provided, which will cause it to break. Water must thus be utilised as a treatment for a specific period of time. Generally speaking, poor repairing is not feasible due to the lack of availability to sufficient water and various other real challenge.

II.MATERIALS USED

Polyethylene Glycol (Self curing Agents), fine aggregate less than 4.75 mm, and coarse aggregate smaller than 20 mm are the materials utilised for the experiment.

2.1SELF CURING AGENTS – PEG 400

The most crucial polyether utilised as a self-curing agent is polyethylene glycol (PEG), also known as polyethylene oxide (PEO) or polyoxyethylene (POE). The standard formula for polyethylene glycol is $H(OCH_2CH_2)_nOH$, where n is the average number of repeated oxyethylene groups, which ranges from 4 to roughly 180 on average. The acronym (PEG) is followed by a numerical suffix that describes the average molecular weights. The fact that PEG is water soluble seems to be one shared characteristic. Numerous medicinal products employ polyethylene glycol because it is non-toxic, odourless, neutral, lubricating, non-volatile, and non-irritating. Table 1.1 shows the various properties of PEG 400.

2.1.2Behavior of PEG 400 in Concrete

Exothermal heat is produced when water is added to dry concrete because it begins to react with the cement and hydrate it. Early shrinkage cracks are brought on by this. Water is evaporating at the same time, which causes fractures to develop. PEG forms a shell around water molecules when it is put to concrete, trapping the water between the shells. Every water molecule in the concrete forms one of these shells. These shells have thicknesses of around 2 nm. Water is constantly accessible at the time when heat of hydration is occurring since water is unable to evaporate from concrete due to the construction of this shell, which lowers the rate of evaporation. This early age of shrinking prevents fractures from developing. Since evaporation does not occur, water is ultimately conserved because it is not required for curing for a specific amount of time.



An Experimental Study on Structural Behavior of Concrete Beam Using Sugarcane Bagasse Fibre

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ABSTRACT

Natural fibers are frequently used in construction in building materials engineering. However, using waste sugarcane bagasse fiber as a natural building material is extremely valuable because it can improve crack control and make brittle concrete more ductile. Additionally, sugarcane construction can help reduce environmental pollution. A mixture of sugarcane fiber will be used in this study to test whether the compressive, flexural, and tensile strengths of lightweight concrete and M25 grade concrete differ. Also, the ideal sugarcane bagasse fiber in the substantial combination where the level of 0.5%, 1.0%, 1.5% and 2%. The specimens of hardened concrete were tested on days 7, 28, and 29 following the curing test. This percentage achieves a value of compressive strength that is comparable to that of concrete control, a value of tensile strength that is higher than that of concrete control, and a timing of concrete cracking that is becoming more sluggish.

I. INTRODUCTION

In India practically all the Structural Designing developments are done utilizing squashed stone total as it was accessible in bounty. Because of weighty expansion in the development exercises, the squashed rock stone which are the traditional coarse total is under consumption and furthermore, presently a-days an intense deficiency of these materials is capable. Additionally, it is proving to be unprofitable because these aggregates must be transported from a faraway location. The issue of air pollution brought on by crushing plants is yet another significant drawback of these aggregate. As a result, alternatives to crushed granite stone must be investigated. Even though river stone has a lot of potential as a natural aggregate, it is rarely

used in concrete. Concrete is comprised of three fundamental fixings which is concrete, sand, totals and water. Notwithstanding, there were

Additionally different materials placed into the substantial blend which is known as habit- forming to expand the strength of the substantial. Concrete is the most broadly utilized development material. It has replaced masonry made of stone and brick due to its ability to be cast in any shape. Plain concrete is feeble in pressure and has restricted flexibility and little protection from breaking. Concrete has long been known for its high compressive strength at a low cost. Concrete has a high compressive strength, but its tensile strength is only 10% of its compressive strength, making it quite brittle. The majority of concrete structures typically endure temperatures that are no higher than those imposed by the surrounding environment. Additionally, the optimal volume of sugarcane fiber in the concrete mixture was 0.5 percent, 1.0 percent, and 1.5 percent, respectively. After the curing test was completed, compressive strength was tested on days 7 and 28. In the meantime, only after 28 days of curing has the tensile test been performed to measure the tensile strength of sugarcane fiber relationships in concrete mixes. Aftereffect of the testing showed that the ideal worth containing admixtures of sugarcane is 0.5%. As a result, sugarcane fiber can be added to the concrete mixture in amounts not exceeding 0.5 percent. For normal or lightweight concrete, the optimal percentage that results in the highest compressive strength is 0.5 percent, which is comparable to the strength of concrete control. When the volume of sugarcane fiber was increased, the tensile strength of the concrete increased, particularly for normal concrete, where the 1.5% volume of



Adsorption Study on Waste Water Characteristics by using Natural Bio-Adsorbents

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Abstract: Wastewater generation and treatment is an ever-increasing concern in the current century due to increased urbanization and industrialization. Hazardous contamination of water is a major hurdle in the provision of usable and drinkable water to the world. Innovative, economic, renewable and environment friendly technologies are need of the hour for wastewater treatment.

Numerous wastewater treatment techniques, including physical, chemical, and biological (primary to tertiary treatment) approaches, are used to address the issue of growing environmental hazards. Various treatment techniques being used have the risks of producing secondary pollutants. The most promising technique is the use of different materials as adsorbents that have a higher efficacy in treating wastewater, with a minimal production of secondary pollutants. Adsorption Technology is used for Grey water treatment.

Adsorption is the most efficient and popular method since it is suited for the removal of turbidity at high concentrations and has a low maintenance cost. This review elaborates the major agricultural and non-agricultural materials-based sorbents that have been used with their possible mechanisms of pollutant removal. This review also explains the re-usability and mechanisms of the used adsorbents and/or their disposal in a safe and environmentally friendly way, along with highlighting the major research gaps and potential future research directions. Additionally, the cost benefit ratio of adsorbents is clarified.

Keywords: Adsorption, Wastewater treatment, Natural bio-adsorbent, Characterization, Sustainable solutions.

I. INTRODUCTION

Water is base of human life, but present situation is not good because water pollution increases day by day by different reasons like industrial untreated discharge in water bodies, religious reasons, navigation in case of leakage of oil during transportation, through waste garbage directly into the water resources which affect aquatic life. Many types of pollutants are present in water like Chloride, Turbidity and TDS (Total Dissolved Solids) also the part of water pollution. So, the treatment is required to minimize the water pollution and to reduce the wastage of water.

II. MATERIALS USED AND ITS PROPERTIES

Materials used for the experiment includes Waste water, Castor seed, Peanut shell powder, Java plum seed or Indian blackberry and activated carbon.

A. Waste Water

Wastewater is water generated after the use of freshwater, raw water, drinking water or saline water in a variety of deliberate applications or processes. Another definition of wastewater is "Used water from any combination of domestic, industrial, commercial or agricultural activities, surface runoff / storm water, and any sewer inflow or sewer infiltration". In everyday usage, wastewater is commonly a synonym for sewage, which is wastewater that is produced by a community of people.

B. Castor Seed (*Ricinus communis*)

Castor seeds in an expeller to extract oil from it in a temperature-controlled with the help of steam. Castor Oil Cake is one of the most versatile natural manures. It is truly organic manure which enhances the fertility of the soil without causing any damage or decay. Castor is a plant that produces seeds. Castor oil is produced from ripe seeds that have had their outer covering removed. Castor oil has been used as a medicine for centuries.

EXPERIMENTAL INVESTIGATION ON THE PROPERTIES OF CONCRETE BY PARTIAL REPLACEMENT OF CEMENT BY USING SUGARCANE BAGASSE ASH

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Abstract: This research addresses the suitability of sugarcane bagasse ash (SCBA) in concrete used as partial cement replacement. The grades of concrete M25 were used for the experimental analysis. The cement was partially replaced by SCBA at 0%, 10%, 20% and 25%, by weight in normal strength concrete (NSC). The innovative part of this study is to consider grades of concrete mixes to evaluate the performance of concrete while cement is replaced by sugarcane bagasse ash. The cubic specimens having size 150 mm x 150 mm were used and tested after curing period of 7, 14 and 28 days. It was observed through the experimental work that the compressive strength increases with incorporating SCBA in concrete. Results indicated that the use of SCBA in concrete (M25) at 10% increased the average amount of compressive strength by 10% as compared to the normal strength concrete. The outcome of this work indicates that maximum strength of concrete could be attained at 10% replacement of cement with SCBA. Furthermore, the SCBA also gives compatible slump values which increase the workability of concrete.

Keywords: Sugarcane bagasse ash, partial replacement of cement.

INTRODUCTION:

Sugarcane is the main food crop in tropical and subtropical countries. It is the major resource for the sugar production. Sugarcane bagasse (SCB) is the waste created after juice extraction from sugarcane. The Sugarcane bagasse ash (SCBA) is acquired through the controlled burning of sugarcane bagasse. The SCB creates the environmental nuisance due to direct disposal on the open lands and forms garbage heaps in that area. According to Barroso, that one ton of sugarcane generates 280 kg of bagasse waste. The sugar industry plays an essential part in the countrywide economy of Pakistan. According to the report of Pakistan sugar mills association, Pakistan produced 65.45 million tons of sugarcane in the year 2015-16 and year 2016-17 is forecasted at 71,371 million tons. Cement is the most widely consumable material in infrastructure development works. It is considered as a durable material of construction. However, the environmental issue of cement has become a rising concern, as cement industries are accountable for 2.5% of total worldwide waste emissions from industrial sources. It is in need of time to rise the use of cement materials in the concrete which can reduce the significant amount of cement consumption, because the production of cement requires huge energy and contributes to Assam. It is also accountable for 5% of global anthropogenic CO₂ release (every ton of

cement produces around 0.1 ton of CO₂), and their usage can also improve the properties of concrete. Therefore, realizing the significance of the issue, this research work is carried out to find out the optimum percentage cement replacement of SCBA in M25 grades of concrete, because grades M25 are widely used for reinforced concrete works. Grades M40 are used for very heavy reinforced concrete/pre-cast/pre-stressed and M30 used for heavy reinforced concrete/pre-cast. Hence, the object of this research is to evaluate the performance of concrete while incorporating sugarcane bagasse ash as cement replacement in different mix proportions.

LITERATURE:

R. Srinivasan and K. Sathiyaa had concluded that blended SCBA in concrete had higher compressive strength, tensile strength and flexural strength compared to that of SCBA. An extent of 10%. They even concluded that with the addition of more SCBA the density of the concrete and the lower weight of the concrete will be produced.

Mrs. U.R. Kawade et al. observed that cement can be replaced with SCBA up to an extent of 15%. The SCLC increases the partial replacement by increasing the workability of the concrete to which the super plasticizer is not required. The remaining part (bagasse) is further used as fuel to heat the boilers. The incineration of bagasse produces the ash. Bagasse has various uses in the market such as in the production of wood, animal foods and thermal expansion etc. then also a lot of bagasse remains unused and they get dumped as landfill. The government is more concerned in utilizing the flash. The ministry of Environment directs the industries to extract the fly ash and reuse it in the production of cement, tiles and bricks etc. Since our nation is a developing one, so the requirement of infrastructure cement is also very high. The production of cement produces harmful gases like CO₂ which degrades the environment causing health issues to the residents. With the advancement in technology, new methods have been adopted to reduce the consumption of cement. One such method is the addition of bagasse ash to concrete. Sugarcane ash is an industrial waste product which contains aluminium ion and silica, which is pozzolanic in nature. For natural pozzolans, the minimum silica, aluminium and iron oxide content is 70% and SiO₂ should be less than 4.9%. The researchers have found that bagasse fulfills these requirements. Thus, ash behaves as a pozzolanic material. In bagasse, there is 50% cellulose, 25% hemicellulose and 25% lignin. It has been observed that approximately 26% of bagasse and 0.62% of residual ash are produced from 1 ton of sugarcane. Use of ash in concrete reduces the cement requirement and also reduces the cost of construction. Researchers also suggest that the bagasse fly



AN EXPERIMENTAL INVESTIGATION OF AAC BLOCK BY ADDING GLASS FIBRE

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Abstract: Autoclaved aerated concrete (AAC) blocks are the lightweight and green concrete blocks that are composed of cement, fly ash, lime, gypsum and aluminium powder. Depending on its density AAC consists of up to 80% of air by volume. Due to their low density and lightweight Autoclaved aerated concrete blocks exhibit so many favourable physical properties that these have got attention from all around the globe. Due to these enhanced properties Autoclaved aerated concrete blocks are extensively used as masonry units in all types of construction. On one hand AAC blocks have no comparison with other types of masonry units in terms of physical properties but on other hand AAC blocks are found to have low compressive strength relatively. In this study an attempt has been made to study the influence of Glass Fibre adding on the physical and mechanical properties of Autoclaved aerated concrete blocks. Four sets of samples were cast and named as A, B, C and D with the fibre adding contents as 0%, 0.1%, 0.2% and 0.3% respectively (by dry weight of all the ingredients). Each sample set consisted of three specimens and the average value of the three samples were taken. For example, the average value of the three specimens- A_1 , A_2 , and A_3 was taken as A and so on. Fibre influenced the aeration process of Autoclaved aerated concrete by increasing the rising/aeration time by 8%. The investigated fibre additive increases the compressive strength by 0%, 10%, 24% and 13.8% respectively to the added fibre contents of 0%, 0.1%, 0.2%, and 0.3% respectively. The optimal content of Glass Fibre additive to be added for obtaining the highest compressive strength is 0.2%. Further investigations have shown a slight variation in density (about 0.2%) between the normal and modified Autoclaved aerated concrete blocks.

Keywords: Autoclaved aerated concrete (AAC) Blocks, Compressive strength, Glass fibre

I. INTRODUCTION

The performance of every structure whether it is a wall-bearing or a framed one is governed by various properties like- strength, fire resistance, thermal resistance, resistance to earthquakes, pest resistance, etc. One of the major components of any structure that decides its fate is the blocks used for its construction. So, to build a good performing

structure in terms of the above-mentioned properties one needs to pay great attention while choosing the right blocks for the construction. One of the fastest emerging building materials for the good performance of structures is Autoclaved aerated concrete. Autoclaved aerated concrete is a lightweight, excellent thermal insulating, fire-resistant, pest-resistant, energy-efficient, environment-friendly and sustainable material [1-5].

Autoclaved aerated concrete material was first developed in Sweden in 1920. It has become one of the most used building materials in Europe and is growing rapidly all around the globe. AAC blocks offer great opportunities to enhance the building quality and reducing the expenses at the same time. Due to its excellent properties, AAC blocks are used in almost every type of structures, for example in commercial buildings, residential apartments, government housing colonies, industrial buildings, and warehouses [6].

AAC blocks are manufactured from cement, fly ash, lime, gypsum and aluminium powder. Aluminium powder is used as an aeration agent. Aluminium powder reacts with the lime (Calcium Hydroxide) to form micro air bubbles due to the formation of the hydrogen. This causes the concrete to rise in the mould and cause an increase in the overall volume of concrete and provide AAC with a strong uniform cellular structure. The process ends after the blocks are steam cured in Autoclave at a temperature ranging from 180°C-200°C and pressure ranging from 12 bars (1200 KPa)-14 bars (1400 KPa) for about 10-12 hours, further strengthening the AAC blocks.

Due to the porous structure of AAC blocks, the density is quite low ranging from 500-650 Kg/m³, making it a very lightweight building material and provides phenomenal properties to the AAC blocks. Because of lightweight, low density, high thermal insulation, high resistance to fire, good appearance, flexibility in sizes, ease in workability, less mortar and plaster consumption, AAC blocks are most extensively used as masonry units in construction. Undoubtedly AAC blocks have so many positive physical properties that have sought attention from all over the world but there are few drawbacks as well, those include low compressive and flexural strength. Attempts have been made by researchers to enhance the mechanical properties of the

Performance of Concrete by Partial Replacement of Cement with BLA

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ABSTRACT: This study was under taken to know the concrete properties using Banana Leaves ash. Concrete is one of the materials that is widely used in construction all around the world. This material is widely used because it has several benefits such as durable, energy-efficient, low maintenance, affordability, fire-resistance, excellent thermal mass and also versatility. World is as of now concentrating on alternate material sources that are environment agreeable and biodegradable in nature. The Banana Leaves Ash is an agriculture waste that has potential to replace one of construction material which is cement. Banana Leaves Ash contains a pozzolanic reaction that usually occurs in Portland cement. Instead of growing banana tree only for fruit consumption and discard the trunks, the use of banana leaves after the fruits are harvested should be explored. This project is conducted to determine the strength of concrete to produce good cementitious material by using Banana Leaves Ash. The source of BLA are found in banana plant and they are readily available, environmental friendly and cheap. In addition, BLA has an excellent potential to improve the performance of concrete. The banana trunks ash was produced from the process of burning the dried banana trunk and collecting the residue of it. The BLA will be used in cement to replace about 0%, 15% & 25% respectively. Mechanical properties such as compressive, split tensile and flexural strength were determined by casting cubes, cylinders and beam respectively.

Key words: Compressive, Flexure & Split tensile strength, Super Plasticizer, Banana leaf ash (BLA)

I. INTRODUCTION

Concrete is most widely used as a construction material due to its good compressive strength & durability. It is material which is used more than any other man-made material on the earth for construction work. The main factor which

determines the strength of concrete is the amount of cement used and water/cement ratio in the mix.

Depending upon nature of work the cement, fine aggregate, coarse aggregate & water are mixed in specific proportions to produce concrete. Plain concrete needs suitable atmosphere by providing moisture for a minimum period of 28 days for good hydration & to attend desired strength. We know that for hydration process curing is must for the concrete. Any lack of curing will badly affect the strength & durability of concrete

The use of alternative material in the construction is increasing day by day. The project deals with the comparative study of properties of concrete by using Banana Leaves Ash as a cementitious material in the concrete mix. The ash produced from various types of agricultural waste can be used effectively as a partial replacement of cement. Some researchers evaluated the presence of pozzolanic activity in the deriving ash of Banana Leaves.

pozzolanic activity in the deriving ash of Banana Leaves. The overall production of banana In India is approximately 16.91 Million Tonnes from 490.70 Thousand Hectares, with national average of 33.5 T/Ha. Maharashtra ranks first in production with 60 T/Ha.

After cutting of banana tree the remaining part of tree i.e. stem and leaves are directly dumped or burned after drying it. That can be utilised as an alternative material for partial replacement of cement. Banana tree contains approximately 80% liquid matter and after drying its weight reduces up to 20% approximately. After burning dry leaves it gives 20% ash by its dry weight. Means if we dry 500 kg of fresh leaves and stems of banana tree, we will get 100 kg dry leaves and 20 kg of leaves ash.

Banana Leaves are mainly obtained from various Banana Production farms (Maximum production is in Jalgoan District). These leaves are sun dried for a period of 30 days and open air



AN EXPERIMENTAL STUDY ON GEOPOLYMER CONCRETE BY USING AUTOMOBILES WASTE PRODUCT

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ABSTRACT

Due to their potential impact on the environment, it is absolutely necessary to increase the utilization of a variety of industrial wastes and decrease cement consumption. Promoting geopolymer concrete, which is cement-free concrete made from industrial waste rich in aluminosilicates and alkaline activators, can help accomplish this. It is common knowledge that fly ash contains a lot of aluminosilicates, so using it as a binder would be a big step toward the green revolution. Hence, endeavors are made in this review to create geopolymer concrete by utilizing fly debris as folio material and Potassium hydroxide (KOH) and Potassium silicates (K₂SiO₃) as basic activators. For alkaline activator solution (AAS) to binder solids (BS) ratios ranging from 0.4 to 0.8, fly ash-based geopolymer concrete has been developed. The current paper conducts an experimental investigation into the effects of various activator/fly ash ratios and concentrations of potassium hydroxide solution (10M, 12M, and 14M). The workability of GP is influenced by the alkaline activator. Characteristics: At 7, 14, and 28 days, the specimens' compressive strength, flexural test, and split tensile strength were compared to 10M, 12M, and 14M. From a compressive strength standpoint, geopolymer concrete is cheaper than regular concrete, but alkaline liquid is more expensive.

INTRODUCTION

The industrial sector and urban population have both experienced rapid growth over the past few decades or so worldwide. CO₂ emissions into the atmosphere are dramatically rising as a result of these developmental activities, particularly the burning of fossil fuels, the production of cement, deforestation, and other activities. By raising CO₂ levels, these emissions caused by humans have shifted the balance of the atmosphere. These man-made sources of emission have upset the natural balance of CO₂ in the atmosphere, resulting in 87% of all human-caused emissions. The construction

industry and, as a result, cement consumption are directly impacted by this rapid industrialization and urbanization.

As a result, cement consumption has skyrocketed, resulting in the release of a significant amount of carbon dioxide into the atmosphere. According to Neville (2014), the reaction of materials and the consumption of fuel for cement production result in the emission of approximately 1 ton of CO₂ during the production of one ton of cement. According to the Intergovernmental Panel on Climate Change (IPCC), the cement production process is the most significant source of global carbon dioxide emissions from non-energy industrial processes. Global cement production currently stands at 4.2 billion tonnes per year and is growing at a rate of 3-4% per year (USGS Report, 2015). According to the Cement Sustainability Initiative (CSI), cement production contributes approximately 5% of all industrial and energy CO₂ emissions worldwide. According to CIF (2015), a cement plant's primary sources of greenhouse gas emissions are the chemical transformation of the raw materials, the burning of fossil fuels to provide the thermal energy necessary for chemical action, and the grinding and transporting of materials. Figure depicts the one percent contribution made by the various activities. 1. However, due to its aesthetic value in comparison to that of other building materials, cement cannot be completely avoided in construction. Therefore, the best course of action might be to investigate the alternative to OPC concrete. In this respects "geopolymer concrete" which can be grown essentially involving modern squanders rich in aluminosilicates like fly debris, red mud, slag, and so forth. Enables not only a reduction in one's carbon footprint by completely avoiding the use of cement, but also a reduction in the pollution of the environment caused by the disposal of these activities.

EXPERIMENTAL INVESTIGATION OF PARTIAL REPLACEMENT OF CEMENT WITH CERAMIC POWDER IN CONCRETE

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ABSTRACT

Every year, tons of ceramic are produced worldwide, and the waste is disposed of in landfills. However, the waste does not decompose in the environment, posing a threat to the environment. As a result, the dissertation's research focused on the partial cement replacement effect of ceramic powder in concrete. Milled ceramic as a partial cement replacement in concrete could be a significant step toward the creation of eco-friendly and technologically cost-effective systems. In this study, OPC was partially replaced with ceramic powder at 10%, 15%, and 20% by weight of the cement in M20 grade concrete. At 7, 14, and 28 days, the results were compared to those of conventional concrete for compressive strength, flexural strength, and split tensile strength.

INTRODUCTION

Concrete is a material with many uses, most of which are in the construction industry. Cement plants typically use this much energy and produce a lot of harmful products that harm the environment. Concrete is a common building material in today's industry. The substantial comprises of concrete, fine totals and coarse totals. Additionally, the cement manufacturing industry contributes 7% of greenhouse gases to global warming on average. Utilizing numerous waste materials like waste ceramic, plastics, fly ash, and industry byproducts, extensive research is ongoing into the use of cement replacements to address these effects on the environment. Since waste ceramic is a non-biodegradable material, dumping it into the ground pollutes the soil. Therefore, waste ceramic is utilized in partial replacement of cement to avoid these issues with disposables. Concrete's durability is enhanced and water absorption is reduced as a result. The compressive, flexural, and tensile strengths of concrete are all enhanced when ceramic powder is

Added. It is feasible to add earthenware in the substantial by supplanting both of the fixings somewhat in various structures. Ceramic can be added to the concrete without the addition of any other materials in the form of powder or crushed ceramic. A mixture of silica, soda ash, and CaO is melted at a high temperature to create ceramic, an amorphous material. After cooling, the mixture solidifies without crystallizing. In artistic powder the fundamental concern is antacid silica response, the synthetic response happens between silica rich clay molecule and the salt in pore arrangement of cement. The finely grounded artistic doesn't add to the soluble base silica response. The waste artistic contains high silica $[\text{SiO}_2]$ - 72%. The formless silica in artistic would break up in basic climate because of Gracious particles in pore arrangement of concrete glue. A study on the durability of concrete with waste ceramic powder revealed improved long-term resistance to chloride permeability, but alkali-silica reaction remains a concern. The finely ground earthenware powder responds with soluble base and cementations item for increment the advancement in strength.

MATERIALS AND ITS PROPERTIES

Materials used for the experiment includes ordinary Portland cement of grade 43, Ceramic Powder, fine aggregate of size less than 4.75 mm, coarse aggregate of size less than 20 mm.

1. Cement

Cement is a binding material in concrete with adhesive and strong properties. The cement used was Ordinary Portland Cement conforming to Indian Standard Specifications (BIS 269-1987 & BIS 1987). The properties of the cement is tabulated in table 1.1

EXPERIMENTAL INVESTIGATION OF LIGHT WEIGHT CONCRETE USING THERMOCOL BALLS

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ABSTRACT

In order to minimise the overall density of the mixture, light weight concrete is a form of concrete that uses thin Thermocol balls. Due to its various advantages, such as better insulating qualities, increased fire resistance, better sound insulation qualities, better and lower weight, this form of concrete has grown in popularity in recent years. A practical and affordable approach that can enhance the efficiency and sustainability of buildings and other structures is the use of Thermocol balls in light weight concrete. An overview of the advantages of employing Thermocol balls in light weight concrete and the advantages of this form of concrete over conventional concrete are given in the experimental abstract.

INTRODUCTION

Concrete that is lighter in weight than regular concrete has a lower density. The concrete's weight and density are decreased by adding thermocol balls while retaining its strength and durability. The thermocol balls serve as a lightweight aggregate and take the place of some of the mix's conventional components. As a result, the concrete is simpler to handle, move, and install. Concrete built with thermocol balls is a great material to use in buildings and structures where energy efficiency is vital since it is

lightweight and has strong thermal insulation qualities.

In general, the incorporation of thermocol balls into lightweight concrete is a creative and economical technique to produce a strong, light-weight construction material with high thermal insulation qualities.

I. Materials used and its properties

Materials used for the experiment includes ordinary Portland cement of grade 53, thermocol 2mm or 4mm, fly ash, M sand, super plasticizer and air entrainment.

I.1 Cement

Cement is a binding material in concrete with adhesive and strong properties. The cement used was Ordinary Portland Cement conforming to Indian Standard Specifications (BIS 269-1987 & BIS 1987). The properties of the cement is tabulated in table 1.1

I.2 Thermocol balls

Structures that need to be lightweight use thermocol. Concrete that has thermocol in it will float over water and maintain its temperature during transportation or storage.

EXPERIMENT INVESTIGATION ON THE PROPERTIES OF CONCRETE BY REPLACEMENT OF PLASTIC WASTE IN PAVER BLOCK

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Abstract – The aim of this project is to replace cement with plastic waste in paver block and to reduce the cost of paver block when compared to that of convention concrete paver blocks. At present nearly 56 lakhs tones of plastic waste is produced in India per year. The degradation rate of plastic waste is also a very slow process. Hence the project is helpful in reducing plastic waste in a useful way. In this project we have used plastic waste in different proportions with quarry dust, coarse aggregate and ceramic waste. The paver blocks were prepared and tested and the results were discussed.

Keywords – P aver block, P lastic waste, C eramic waste

I. INTRODUCTION

Paver block paving is versatile, aesthetically attractive, functional, and cost effective and requires little or no maintenance if correctly manufactured and laid. Most concrete block paving constructed in India also has performed satisfactorily but two main areas of concern are occasional failure due to excessive surface wear, and variability in the strength of block. Natural resources are depleting worldwide at the same time the generated wastes from the industry and residential area are increasing substantially. The sustainable development for construction involves the use of Non-conventional and innovative materials, and recycling of wastematerials in order to compensate the lack of natural resources and to find alternative ways conserving the environment.

Plastic waste used in this work was brought from the surrounding areas. Currently about 56 lakh tonnes of plastic waste dumped in India in a year. The dumped waste pollutes the surrounding environment. As the result it affects both human beings and animals in direct and indirect ways. Hence it necessary to dispose the plastic waste properly as per the regulations provided by our government. The replacement of plastic waste for cement provides potential environmental as well as economic benefits

With the view to investigate the behaviour of quarry rock dust, recycled plastic, production of plastic paver block from the solid waste a critical review of literature was taken up. An attempt was made by Nivetha C et.al¹ to reuse the solid waste quarry dust fly-ash and PET with an aim not to lose the strength far from original Paver blocks. From the observations of test results, PET can be reused with 50% of quarry dust and 25 % of fly-ash in Plastic Paver block.

The physical and mechanical properties of materials used in Plastic Paver block were investigated. For the test 6 cubes cube were cast for measuring Compressive strength. Satish Parihar et.al² used recycled plastic aggregate in various proportions in concrete mix and check there stability.

Amountof waste plastic being accumulated in 21st centuries has created big challenges for their disposal, thus obliging the authorities to invest in felicitating the use of waste plastic coarse aggregate in a concrete is fundamental to the booming construction industry.

Three replacement levels of 10 %, 20%, 30 by weight of aggregates were used for the preparation of the concrete. Poonam Sharma³ et. al. discussed about cement concrete paver blocks for rural roads. The study of Joel Santhosh and Ravikant Talluri⁴ indicated that fly ash and waste glass powder can effectively be used as cement replacement without substantial change in strength

Breast Calcifications and Histopathological Analysis on Tumour Detection by CNN

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Abstract: The most salient argument that needs to be addressed universally is Early Breast Cancer Detection (EBCD), which helps people live longer lives. The Computer-Aided Detection (CADs)/Computer-Aided Diagnosis (CADx) system is indeed a software automation tool developed to assist the health professions in Breast Cancer Detection and Diagnosis (BCDD) and minimise mortality by the use of medical histopathological image classification in much less time. This paper purposes of examining the accuracy of the Convolutional Neural Network (CNN), which can be used to perceive breast malignancies for initial breast cancer detection to determine which strategy is efficient for the early identification of breast cell malignancies formation of masses and Breast microcalcifications on the mammogram. When we have insufficient data for a new domain that is desired to be handled by a pre-trained Convolutional Neural Network of Residual Network (ResNet50) for Breast Cancer Detection and Diagnosis, to obtain the Discriminative Localization, Convolutional Neural Network with Class Activation Map (CAM) has also been used to perform breast microcalcifications detection to find a specific class in the Histopathological image. The test results indicate that this method performed almost 225.15% better at determining the exact location of disease (Discriminative Localization) through breast microcalcifications images. ResNet50 seems to have the highest level of accuracy for images of Benign Tumour (BT)/Malignant Tumour (MT) cases at 97.11%. ResNet50's average accuracy for pre-trained Convolutional Neural Network is 94.17%.

Keywords: Computer-Aided Detection; breast cancer detection; convolutional neural network; class activation map; computer-aided diagnosis

Covid-19 Forecasting with Deep Learning-based Half-binomial Distribution Cat Swarm Optimization

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Abstract: About 170 nations have been affected by the COvid Virus Disease-19 (COVID-19) epidemic. On governing bodies across the globe, a lot of stress is created by COVID-19 as there is a continuous rise in patient count testing positive, and they feel challenging to tackle this situation. Most researchers concentrate on COVID-19 data analysis using the machine learning paradigm in these situations. In the previous works, Long Short-Term Memory (LSTM) was used to predict future COVID-19 cases. According to LSTM network data, the outbreak is expected to finish by June 2020. However, there is a chance of an over-fitting problem in LSTM and true positive; it may not produce the required results. The COVID-19 dataset has lower accuracy and a higher error rate in the existing system. The proposed method has been introduced to overcome the above-mentioned issues. For COVID-19 prediction, a Linear Decreasing Inertia Weight-based Cat Swarm Optimization with Half Binomial Distribution based Convolutional Neural Network (LDIWCSO-HBDCNN) approach is presented. In this suggested research study, the COVID-19 predicting dataset is employed as an input, and the min-max normalization approach is employed to normalize it. Optimum features are selected using Linear Decreasing Inertia Weight-based Cat Swarm Optimization (LDIWCSO) algorithm, enhancing the accuracy of classification. The Cat Swarm Optimization (CSO) algorithm's convergence is enhanced using inertia weight in the LDIWCSO algorithm. It is used to select the essential features using the best fitness function values. For a specified time across India, death and confirmed cases are predicted using the Half Binomial Distribution based Convolutional Neural Network (HBDCNN) technique based on selected features. As demonstrated by empirical observations, the proposed system produces significant performance in terms of *f*-measure, recall, precision, and accuracy.

Keywords: Binomial distribution; min-max normalization; Cat Swarm Optimization (CSO); COVID-19 forecasting



FRACTIONATION USING K MEANS CLUSTERING

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ABSTRACT

The k-means algorithm is often used in clustering applications but its usage requires a complete data matrix. Missing data, however, is common in many applications. Mainstream approaches to clustering missing data reduce the missing data problem to a complete data formulation through either deletion or imputation but these solutions may incur significant costs. Our k-POD method presents a simple extension of k-means clustering for missing data that works even when the missingness mechanism is unknown, when external information is unavailable, and when there is significant missingness in the data.

Keywords—K-means clustering, k-POD



Data Integrity on the Cloud Computing using Algebraic Signature

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Abstract: The Trends of Cloud Computing, the cloud security work must be important because the huge number of data with specialized connections to distribute data processing among the various servers. Client stores their data on cloud server to maintain their data privacy and data security. The popular data security method which is called cryptography taking more time and space to encrypt and decrypt for data auditing processes. The existing method is Provable Data Possession which is dynamically operates the data and gives the high computation space and time complexity. So to avoid that complexity the proposed method is called as Algebraic Signature to used low computation performance time and low data space for large data set. It is based on data integrity method for providing good data security on the cloud for large organization also. This proposed method is used the Third Party Auditing method which is to provide large data file security with the Hashing technique using Algebraic Signature method. The conclusion of this paper is providing the data integrity and time efficiency of the process using TPA method also provides the dynamic operation.

Keywords: Cloud Service Provider, Algebraic Signature, TPA and Hash technique.

Radio Frequency Sensor for Emergency Based On Traffic Light System

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ABSTRACT

Road accidents have escalated to an unknown extent in modern urban regions. The loss of human life due to accident is to be avoided. The loss of human life due to accident is to be avoided. Traffic congestion and tidal flow are major facts that cause delay to ambulance. Modern metropolitan regions experience an unsettling surge in traffic accidents. Accidental human fatalities must be prevented. Tidal flow and traffic congestion are two significant factors that delay ambulances. We create a system called ITLS (Intelligent Traffic Light system) to prevent wrongful death accidents. The main goal of this plan is to minimise delays brought on by traffic congestion by facilitating a fluid flow for emergency vehicles, such as ambulances, to arrive at hospitals on time. The purpose of this plan is to implement ITLS, which would mechanically control the traffic lights along the ambulance's path.

I. INTRODUCTION

In a recent study, Serafati et al. (2017) looked into whether the frequency of persons dying in traffic accidents varied between urban and rural areas. This variation in death toll is brought on by emergency services' response times. Their findings suggested that reducing the disparity in access to healthcare services between urban and rural areas could help to reduce the high prevalence of fatal accidents. The National Highway Traffic Safety Administration (NHTSA) and other organisations that promote road safety Serafati et al. (2017) examined whether there were differences between urban and rural locations in the frequency of fatal traffic accidents. The varying reaction times of emergency services are to blame for this difference in the mortality toll. According to their research, the high frequency of fatal accidents could be decreased by reducing the discrepancy in access to healthcare services between urban and rural locations. Road safety is promoted by the National Highway Traffic Safety Administration (NHTSA) and other organisations.

II. RELATED WORK

We propose an intelligent traffic management and control system. The system comprises the vehicle LED head and tail lights, the sending end of the control LED lights, the photoelectric or image sensor of the vehicle, and the control station as the receiving end. The vehicle and the control station communicate through the light. The LED lights of a vehicle and control station are equipped with an embedded VLC module. The vehicle communicates with the control station by visible light firstly, and then the control station communicates with the control center through cable or optical fiber.

This variation in the death rate is due to the emergency services' various response times. Their study found that lowering the disparity in access to healthcare services between urban and rural areas could reduce the high frequency of fatal accidents. The Road safety is promoted by the National Highway Traffic Safety Administration (NHTSA) and other organisations. The station communicates with the control centre through cable or optical fibre. In today's society, the problem of traffic congestion is only getting worse. The population and the number of cars are both rising steadily. The uneven distribution of development and the inadequate infrastructure are the root causes of many problems. Reduced travel times and traffic jams are especially important in developing countries, hence intelligent traffic light signals are required.. Due to the manual or fixed timing techniques used in modern traffic systems. Therefore, we require efficient and reliable traffic handling

Car Parking Space Identifying System Using Python

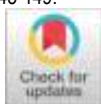
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Abstract: Nowadays, in India the concept of smart cities are gaining great popularity. The smart cities are incomplete without smart car parking system. The traffic congestion caused by vehicles is an alarming problem at global scale and it has been growing exponentially, also it increases pollution and wastage of time. A good solution this problem could use of python based smart car parking system to decrease pollution as well as parking time. In this project we propose a system to find the parking area. It also avoids congestions. The objective of this project is to smart car parking system using python. This project is used to Smart Parking system consists of an on-site deployment of a python technology that is used to monitor and signalize the state of availability of each single parking space using IR Sensor

Key Word: LCD, Python, Raspberry pi, Fire sensor, Gas sensor.

I.INTRODUCTION

Smart parking enables better and real time monitoring and managing of available parking space resulting insignificant revenue generation, better urban environment and reduces fuel consumption. Present days getting a parking space in urban areas are very difficult in peak hours due to lack of parking spaces. Due to this driver stuck in traffic or looking for parking spaces around the location makes traffic congestion. This causes waste of money and time. Our system proposes a Smart city car Parking System on Streets which enables the user to park his vehicles in a systematic way and it reduces congestion in parking area. For user convenience our system includes finding vacant space through LCD display is done on the basis of period of parking.

II.LITERATURE SURVEY

The Arduino and hub MCU is utilized to foster the exceptionally safe and quick stopping framework ,Through this we can without much of a stretch observe the stopping spaces in the stopping region ,Arduino is utilized to see the stopping openings by utilization of IR sensors, Infrared sensor is utilized to detect assuming the article is stopped In space or not, Node MCU is the part is utilized to screen the general framework in the versatile application, Node MCU is an open-source based firmware and advancement load up uniquely focused on for IoT based Applications, LCD show is utilized to show the data about the spaces, through this thought we can handle the stopping mishap and save time[1].The system is working 24/7 throughout the year. Data from sensors are collected and by using Node MCU we are uploading it to Wise3 IoT server. When the user wants to park, first the RFID swiped should be validated, upon valid user confirmation he can park the vehicle in the dedicated parking space provided/selected [2].In this paper, we will make of micro-controller and this is used to process the instructions continuously in a loop. The user will first scan the RFID card using the RFID reader and the webpage will update the user details and even before the user scans the RFID card, the web page will display is there any available parking slot or not. After updating the user details on web page, a DC motor is used to open the gate for the user. Now the web page displays the available parking slots as well as the nearest parking slot to the user. IR sensors are used for the object detection in the paper and by object in this is the vehicle. As soon as the user parks the vehicle in the parking slot, the IR sensor will detect the object and forwards the information to the micro controller and the micro controller will process this information and update on the page [3].

Trouble to find Vacant Spaces, quickly finding an empty space during a multilevel parking garage is troublesome if not unthinkable, particularly on ends of the week or open occasions. Searching space to park the cars during weekends or open occasions can take over 10-15 minutes for around 14 66% of guests. Stadiums or shopping mall are swarmed at pinnacle periods, and trouble to find empty openings at these spots may be a noteworthy issue for clients. Inadequate car parking lot prompt activity blockage and driver disappointment. Our system solves all issue stated above [4].In this proposed system, the mobile application consists the register and login page for the security purpose and to provide a particular slot to the user. It also displays the petrol bunks and the shopping malls that are available in the parking areas. In this traffic also reduce in the parking slots by using IR sensors to allocate the slots for the users who are register in the application [5].



ADVANCED FIRE FIGHTING ROBOT WITH ALERTING SYSTEM USING ARDUINO UNO

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Abstract: This project is prepared to evolve a fire fighting robot using RF control technique for faraway. The robotic vehicle is filled with water tanker and a pump which is restrained over wireless communication to throw water. An 8051 series microcontroller is used for the desired activity. This mobile robot is restrained using a mobile phone and outstretch fire at the transmitting end using push button, commands are enabled to the receiver to control the movement of the robot either to moved forward, backward and left or right. At the target end four dc motors are interfaced to the microcontroller. Further project improved by computing it with a wireless technology.

Keywords: Fire Fighting Robot, Extinguisher, Building, Buzzer

I. INTRODUCTION

One of the most significant framework in fire holocaust is life, i.e. lives lost in saving anyone else life. It is sometimes not possible for fire-fighters personnel to enter the site of a fire because of inflammable materials, smoke, and dominant temperatures. A fast response to determine the fire can deflect many disastrous things. It is followed that fire can take place at household as well as at industrial level. A normal spark can generate a enormous fire breakout. Not only lives of industrial people but also the lives of domestics people is at risk because of low fire management system. Fire can kills many lives and can damage many

ACCIDENT PREVENTION FOR HAIRPIN BENDS USING ARDUINO UNO

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Abstract - An accident prevention system is a device that helps to avoid or reduce the impact of road crashes by using different methods such as measuring speed, distance, and angle of vehicles, capturing images of the road conditions, sending location and emergency messages to authorities and family members, etc. A hairpin bend is a turn that looks like a hairpin or a U-shape on a road that goes up or down a slope. A vehicle has to make a very tight turn to stay on the road. Hairpin bends are common on mountain roads or hilly areas where the road has to fit in a narrow space. Accident prevention system for hairpin bend using Arduino is a great way to keep drivers safe while they are on the road. This system uses an Arduino microcontroller to detect a sharp bend in the road and alert drivers when they are approaching a hairpin turn. The system works by using an Arduino board to detect the sharp turns in the road and then activating a warning light to alert drivers when they are approaching a hairpin turn. The Arduino board is programmed to detect the vehicle in the opposite directions and then send a particular light signal when it reaches a certain angle. This signal can be used to trigger a warning light that will alert drivers to slow down and be cautious when approaching a hairpin turn. This allows drivers to slow down and be cautious even before they reach the turn.

Index Terms - Arduino UNO, RS232, LED display, LCD, Camera.

I. INTRODUCTION

Vehicles play an important role in our daily lives, e.g., moving from one place to another, transporting goods, food, etc., and reducing people's travel time. Based on current knowledge and reports, many accidents on mountain roads occur due to poor visibility of other oncoming vehicles, landslides, and poor weather conditions. However, no safety precautions or measures have been taken to avoid them. Because of this, lives are lost. Vehicles that make sharp turns are more prone to accidents. Due to the lack of visibility between the line and the curving vehicle, drivers must exercise extra caution when negotiating these deep turns. There are also traffic jams caused by disorderly traffic. Vehicles are important in everyone's daily life. In addition, there is a high rate of accidents caused by high speeds and reckless driving. In hilly areas, the situation is more dangerous. Due to the sharp turns, vehicles have no visibility. The proposed system will therefore help avoid cornering accidents and save lives.

II. LITERATURE SURVEY

The paper [1] proposes a prototype of Collision detection system is developed using a server running as an eye in the sky and a device having GPS and can communicate with server. Smartphone is considered to represent a mobile vehicle having a device containing GPS for identifying geographic location of the vehicle and transmit and receive data to and from server by sending data fields about current status as the device is moving it send location updates to server. Server processes this data and identifies the existence of overlapping safety zones and replies the information about nearby devices and collision warnings if any overlapping is detected among safety zones. This system is successfully deployed and tested with a few mobile devices in which alerts are generated for overlapping safety zones for the devices.

The paper [3] proposes as the population is increasing day by day the chances of accident occurring is also increasing. The main cause of all these accidents is negligence, negotiation of safety measures etc. As technology is getting advanced in a greater speed safety measure also being modified but still accidents are still happening meeting with an accident.

The paper [4] proposes in hilly areas negotiating a hairpin bend is not an easy task. The driver must be alert always negotiating blind curves. Accidents mainly occur due to over speeding of vehicle while negotiating a sudden curve. In hairpin bends always first preference should be given to uphill vehicles. Deciding the importance based on priority algorithms one vehicle is allowed and the speed of other vehicles is gradually reduced by DC motors. The location of the vehicle is based on GPS. Deciding the importance based on priority algorithms one vehicle is allowed and the speed of other vehicles is gradually reduced by DC motors.

The paper [5] describes an accident cannot be completely avoided, but they can be mitigated with appropriate traffic management. The sensor on the other side of the curve sends a signal to the vehicle approaching from the opposite direction in the same way. Each system has NODE MCU module, ultrasonic sensor and (LCD) Liquid crystal display that are powered by solar energy. The proposed sensor-based safety system can be placed at a hairpin bends to alert vehicle drivers using the road.



Iotenabled patient monitoring system

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Abstract: Health is the major factor for a happy and healthy life in today's world. It is mandatory to administrate and manage the healthcare industry. In present day, with the expansion of innovations, specialists are always looking for innovative electronic device for identification of irregularities within the body. It is the need of the hour to administrate and manage the healthcare industry because of the advanced technological development. Patient Monitoring system provides better solutions for the complete one-time comprehensive solution and systematic approach for accurate control of administrative processes by IoT solution. This system provides effective ways to reduce the burden and focus on strategic planning to upgrade their services while fetching the information from the patient and monitoring their functions. It provides patient identification, tracking and monitoring process that can be controlled by authorized people. This system is designed by IoT based monitoring system that measures the patient's heart beat, temperature, blood pressure and the acceleration of the body.

Keywords: Heart rate measurement, Accelerometer, real time monitoring, pulse sensor.

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I. INTRODUCTION

The Patient Monitoring system is provided by the IoT solutions. The centralized automation system tracks other functions and operations are only controlled by authorized person. The system will measure a patient's body temperature, heartbeat, blood pressure and acceleration of the body. A sensor in this health monitoring system will collect information about the patient's and their health condition. As a result, if an emergency situation arises, this hardware component will send a report to the physicians or medical professionals as soon as possible. The remaining work will be done by doctors based on their reports. It is a multi-parameter monitoring system that will monitor the patient's abnormalities. Various sensors have been used to measure the data of patients in

A Wearable Medicines Recognition System using Deep Learning for People with Visual Impairment

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ABSTRACT

Visual impairment has had a significant impact on people and the world. Due to their more sensitive audible range and touch, Sensory Replacement Devices (SRDs), which convert visual information to audio or touch, are an accessible choice for those who are blind or visually impaired to improve their quality of life, employment opportunities, and education. Using scene-perception-based deep learning, we presented a spectacle with provision of vision-to-audio transfer system in this study to help visually impaired persons recognise and find familiar substances in their location. The scheme comprises of a Bluetooth voice feedback unit with a microphone, a wireless camera unit, and a mobile application running customised software. The camera element collects imageries from the environment then transfer them to an mobile software application. People with blindness who use the programme may get spoken instructions and audio aid thanks to the Bluetooth voice feedback

NON HYDRAULIC SOLAR PANEL SLANG

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ABSTRACT

The effectiveness of a sun panel is appreciably decreased while dust (occasionally called soiling) builds up on its surface, lowering the amount of daylight that reaches the sun cells underneath. They need to be wiped clean occasionally, normally with water, so that it will utilise their meant functionality to the utmost. Cleaning will become tough, expensive, and tough in a few locations because of water constraint. The pioneering and powerful sun photovoltaic conversion approach is broadly utilised to transform sun energy. A new tool for electrostatic cleansing has been designed and implemented. The cleansing overall performance of this tool has been examined thinking about the electrode designs. The electric powered subject fee turned into decided via way of means of analytical and numerical techniques with inside the traditional version. The published circuit forums of the proposed version and the traditional version have been produced. The conventional version with effective and negative waveform is broadly utilized in electrostatic purifier studies. Dust elimination efficiencies and electric losses for exceptional frequency and voltage values have been in comparison for each card. It has been proven that the proposed version can carry out cleansing with excessive performance in spite of comparable loss variation.

Keywords: Arduino Uno, LCD display, Battery, Mosfet, Voltage Controller, AZO polymer coating plate, DC motor.

1. INTRODUCTION

With the increasing use of energy and climate change due to the use of fossil fuel sources, there is growing interest in renewable energy sources, including the direct use of solar radiation by photovoltaic cells (solar panels). However, these are subject to degradation in efficiency due to factors such as location, environment and weather conditions. Other conditions include dust accumulation on the panels, shading from structures such as trees and buildings, seasonal changes, weather influences such as snow, rain, clouds, and animal (bird, etc.) migration routes in the vicinity of the production site. The pollution of the panels caused by these factors influences the output voltage of the panel and thus the energy production. However, solar power plants require data monitoring.

2. Literature survey

2.1 Design on Measurement and Control System of Cleaning Robot Based on Sensor Array detection

A new quite home intelligent cleaner adopted the inaudible and infrared device array, that has performed the period surroundings perception, is introduced, and this cleaner driven by step-motor has the facility of autonomous operating by itself and thus the functions of the automatic obstacle detection and obstacle shunning. This paper adopts the grid scanning formula supported electrical map notice floor coverage task, and styles synthesis detection system supported device array finding technique technology per formula characteristics, experimental results for obstacle detection by static

Adaptive Route Sink Relocation Using Cluster Head Chain Cycling Model in WSN

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Abstract: Wireless Sensor Networks (WSN) have revolutionized the processes involved in industrial communication. However, the most important challenge faced by WSN sensors is the presence of limited energy. Multiple research investigations have been conducted so far on how to prolong the energy in WSN. This phenomenon is a result of inability of the network to have battery powered-sensor terminal. Energy-efficient routing on packet flow is a parallel phenomenon to delay nature, whereas the primary energy gets wasted as a result of WSN holes. Energy holes are present in the vicinity of sink and it is an important efficient-routing protocol for WSNs. In order to solve the issues discussed above, an energy-efficient routing protocol is proposed in this study named as Adaptive Route Decision Sink Relocation Protocol using Cluster Head Chain Cycling approach (ARDSR-CHC2H). The proposed method aims at improved communication at sink-inviting routes. At this point, Cluster Head Node (CHN) is selected, since it consumes low energy and permits one node to communicate with others in two groups. The main purpose of the proposed model is to reduce energy consumption and define new interchange technology. A comparison of simulation results demonstrates that the proposed algorithm achieved low cluster creation time, better network error and high Packet Delivery Rate with less network failure.

Keywords: Cluster head; energy-efficient routing; chain routing; cycling approach; sink relocation; adaptive routing; WSN

1 Introduction

The advancements in industrial communication demand heavy performance from network whereas Wireless Sensor Network (WSN) lags behind due to energy-constrained sensor nodes. It usually experiences energy maintenance issues like power consumption whereas Software Defined Network (SDN) and Internet of Things (IOT) networks cannot provide energy to each sensor terminal. Many proposals have been made earlier to improve the energy level of sensor nodes by taking advantage of on-site spatial communication in order to extend the network lifetime of sensors and transmit huge volumes



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WIRELESS SENSOR NETWORK BASED LINEAR SENSOR NETWORK FOR PREDICTION OF LAND CONDITIONS AND PROVIDING IRRIGATION FOR CROPS CULTIVATIONS

Authors
SUDHA, M.; SUBRAMANIAM, KAMALARAJ; OLIVER, A. SHERYL; SWAMINATHAN, K.

Abstract
Sensors and the Internet of Things (IoT) are critical if global agriculture is to move in a more productive and long-term direction. Thanks to recent advances in IoT, Wireless Sensor Networks (WSN), it is now possible to address environmental, technical challenges and opportunities in this industry. Data generated by increasing numbers of networked devices are becoming increasingly complex in terms of modalities as well as spatial and temporal volatility. This huge quantity of data must be processed and analysed in a way that leads to better forecasting, and the reliable organisation of sensors. This study proposed the use of a linear sensor network with several sensors as Intelligent Soil Moisture Sensor Unit to evaluate the ground status level and to provide irrigation for crop cultivations. The results were encouraging. This approach is capable of protecting crops from a wide range of threats. An IoT-based data-driven smart farm prototype is also discussed as an integrated water solution by considering the Global position system (GPS). Reduced energy consumption and longer sensor network life are the goals of this proposed model. To find out how the network's lifetime and average energy consumption have changed over time, researchers run simulations.

Keywords
Internet of Things and sensor node; battery consumption; farm irrigations; integrated food

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Published: 07 March 2022

Optimizing Spectrum Sensing by Using Artificial Neural Network in Cognitive Radio Sensor Networks

S. Esakki Rajavel , T. Aruna, G. Rajakumar & A. Tury
Claudia

Wireless Personal Communications **125**, 803–817 (2022)

152 Accesses [Metrics](#)

Abstract

Resource allocation is most needed in the next generation of Cognitive radio networks these techniques are used to increase the Cognitive radio network's performance. But, it is difficult to accomplish these techniques in real-time performance wireless. In this paper, a resource allocation technique based on artificial neural networks (ANN) is proposed which helps to reduce the power consumption in the network. The goal of the proposed scheme is to secure data transmission and to increase the uplink and downlink speed with less bit error rate. From the Simulation results, it can be observed that the proposed technique based on ANN is efficient in

Clustering-based Energy-Efficient Resource Allocation in Cognitive Radio Based Smart Grid

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Research Article

Keywords: Cognitive radio, Smart Grid, Clustering, Channel allocation, Fairness, Energy Efficient

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Low-cost, broadband electrically small microstrip antenna using I-shaped metamaterial structure for WLAN/WiMAX and 5G vehicular applications

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Abstract

The manuscript presents a novel, simple, inexpensive, electrically small antenna. The design is numerically investigated and analyzed using the HFSS tool. The manufacturing is accomplished via FR-4, a low-profile substrate material. The dimension of the proposed square structure is 20mm. The design was analyzed for the 2GHz–6GHz frequency range. The reflectance response, gain, radiation pattern, and electric field distribution (EFD) is analyzed for performance identification. There are comparisons between simulated and measured outcomes. Variations in feed location, and dimensions of the inner and outer regions of the patch are used to identify the minimal S_{11} value of reflectance response. The design provides the reflectance response of -36 dB at resonating frequency of 3.45GHz. A larger bandwidth of 1.6GHz is available with this design because of its higher frequency response and higher gain of 14.1 dBi, which results in an EFD maximum of 2.54×10^2 V/m. The proposed design can be applicable in WLAN/WiMax and 5G vehicular applications with its small design.

A WSN-Based Electronic Nose for Gas Leakage Detection System in Thermal Power Station

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Abstract: Gas leakage can cause major incidents resulting in both human injuries and financial losses. To avoid such situations, a considerable amount of effort has been devoted to the development of reliable techniques for detecting gas leakage. The existing system available for thermal power station environment has drawback in poor detection of all kind of gases with in the stipulated time. The primary goal of this work is to design arduino based electronic nose for detecting hazardous gases using advanced sensor. In order to alert the supervisor of the gas plants about the gas leakage, an SMS notification will be sent. This paper holds even more relevance in the current pandemic situation because industries are facing paucity of workmen due to social distancing rules and a system would enable them to aware of any mishaps at the industrial site. This gas leakage detection system developed will be an alternate for the presently available system that are set in industrial areas. This system can also be used in houses and at work places too. The experiment results shows that the instance response and accurate detection of hazardous gases of the proposed system compared to the existing methods.

Keywords— Leakage detection, WSN, Gas sensor, electronic nose

1.INTRODUCTION

This technology is growing day by day. With this technology, we have not succeeded to take care of our environment in which we live. Thus, we have polluted the surrounding, thereby decreasing the quality of the environment we live. Even though there are many types of pollution such as water, soil and air pollution, out of these air pollution acts as the major problem as the other can be detected visually and by taste, but the toxic air cannot be detected as it can be colorless and tasteless. These gases have to be monitored such that rise in the normal level of them could be detected and suitable safety measures can be taken. But the present systems available are not so handy, are expensive and hard to implement. So, an embedded system is designed using NodeMCU Microcontroller, for the purpose of sensing toxic gas leakage, which in turn neglects the dangers that have adverse effects on human lives. The toxic gases like carbon monoxide, methane and LPG are mentioned here. The system is reasonable and can be easily implemented in the chemical factories and in localities which is surrounded by the chemical industries or plants. The system also has the provision to provide real-time monitoring of concentration of the gases which is present in the atmosphere. As this method is automatic the information can be given rapidly. Electronic-nose is a system that uses a pattern of responses from an array of gas sensors to identify and examine gas samples. Electronic nose usually includes sample delivery system, detection system and computing system. The sampling system enables generation of unstable compounds and enters into the head

space of the detection system. Detection system holds sensors and when it is contrasted with volatile compounds develop a change in electrical properties and it is recorded by changing into corresponding digital values. Computing system works to combine response of all sensors and it performs global fingerprint analysis and provides results and representations which can be easily interpreted. This project plans to deal with electronic-nose that detects harmful airborne chemicals. For example, electronic-nose is used in detection of dangerous gases like ammonia. If ammonia gets leaked, it effectively absorbs the same and gives an alert about the same.

2. LITERATURE SURVEY

This paper [1] provides the design method on both software and hardware. The functionality of the system is divided into three steps. In the initial step, the gas leakage is detected by the gas sensor MQ-6. This detects the gas leakage and gives the signal to the help of ADC. After that in second step microcontroller receive the signal, send by gas sensor. It sends activation signal to other external devices attached with it. Such as two stepper motor IC, buzzer, LCD, GSM module and RF link. In the last step, many tasks have been performed such as buzzer activates simultaneously message display on liquid crystal display screen, GSM module activated, which send warning message to the user. Stepper motor IC (ULN 2003A) to drives the stepper motor attached it, as a result main power and gas supplies turn off. At the end, when the gas leakage is successfully stopped then with the help of reset button the whole system reached to the initial stage.

SELF CIRCUITRY PERCEPTION FOR PHYSICAL ENVIRONS

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ABSTRACT

The internet of things in the 22nd generation can fight against COVID -19 . COVID -19 is a global pandemic which has brought general changes to human life. COVID -19virus or viral disease can be reduced with the help of social distancing and health monitoring. social distancing can reduce the risk of COVID -19.to maintain physical distance between people, we have made a project which will help people to maintain a minimum distance between them using different Iot sensors and Arduino microcontroller boards. Then people health condition monitoring SPO2 sensor used oxygen level .The infrared temperature sensor appears to be rather straightforward point ,press the button and read the temperature in case of abnormal status GPS Tracking systems enables a base station to keep track of the person current status and navigation system helps the driver to reach the destination and monitoring physical distancing will be part of our life till COVID -19 is under control and this project will help to maintain a secure distance from others.

Keywords— Arduino UNO microcontroller, SPO2 and GPS Tracking Using IOT Technology.

1. INTRODUCTION

The worldwide pandemic Covid (Coronavirus) episode arose first time in 2019 in Wuhan, China. Since from December 2019, the infection continued spreading to 213 nations and regions. Covid sickness is an infectious illness with brooding of one to fourteen days of hatching period. It is a period where patient isn't having any side effects of Coronavirus infection, in fact called as SARSCOV-2. At the point when a flare-up starting breaks get into urban communities, early recognition, uninflected the tainted individual and following potential contacts are estimated are a lot of fundamental. IoT conventions, strikingly Bluetooth Low Energy (BLE) still as NFC, RFID, GPS, and {WIFI | Remote Neighborhood Square Measure Network |WLAN| remote devotion | WIFI| neighborhood |LAN} are getting plentiful consideration for giving answers for those difficulties The inspiration for doing this venture was principally an interest in endeavor a difficult task in an invigorating area of examination. IOT is boundlessly creating field in independent innovation.

We desire to fabricate a social removing pack which will actually want to adjust to its environmental elements and understand the important cautions which are given to client to give an effective and computerized process. The degree of insurance and wellbeing can be expanded by various times when contrasted with the ongoing situation. This task expects to tackle the issue that happens by not keeping up with social separating during Coronavirus pandemic. Our venture is prepared to do consequently dissecting the distance between 2 individuals recommended by states. It's able to do naturally examining the administrative standards set for social removing and in view of the set rules it will characterize the choice most appropriate in that specific circumstance and will follow up on it. Social separating Pack will be not difficult to utilize and wear with a disturbing office to client The task is constructed involving Arduino as a handling and controlling unit of the framework, the social removing kitwill be getting to the mathematical resources, for example, the distance between the people which are evenly lined up with the item with the assistance of sensor's information which will

SMART PREVENTIVE INSOLE FOR DIABETES

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ABSTRACT

Smart wearable gadgets are powerful in diabetic foot ulcer (DFU) prevention. However, elements figuring out their recognition are poorly understood. This systematic evaluation pursuits to observe the literature on affected person and issuer views of clever wearable gadgets in DFU prevention. The methodological pleasant of the research ranged from low to moderate. Two research hired a quantitative have a look at layout and centered at the affected person perspective, whereas three research blanketed a mixed, quantitative/qualitative layout and explored affected person or provider (podiatrist) perspectives. Four research targeted on an insole gadget and one covered a clever sock device. The quantitative research validated that gadgets had been comfortable, properly designed and beneficial in stopping DFU. One combined layout observe suggested that sufferers did now no longer intend to undertake an insole tool in its cutting-edge layout due to malfunctions, a loss of consolation and alert intrusiveness, regardless of the overall notion that the tool became a beneficial device for foot threat monitoring. Two mixed design studies found that performance expectancy was a predictor of a podiatrist's behavioral intention to recommend an insole device in clinical practice. Disappointing player studies negatively impacted the podiatrists' purpose to undertake a clever device. The modern proof approximately affected person and issuer views on clever wearable generation is restrained via way of means of scarce methodological best and conflicting results. It is, thus, now no longer viable to attract definitive conclusions concerning acceptability of those gadgets for the prevention of DFU in human beings with diabetes.

Keywords: Arduino Uno, Node Mcu, DHT11 Sensor, Max Sensor, Hall effect sensor, RTC, GPS, Vibrator.

1. INTRODUCTION

One of the major diseases of diabetic patients is peripheral neuropathy where diabetic patients develop pressure ulcers in their feet. A bad plantar pressure distribution, an excessive humidity and a high temperature are relying of the high-satisfactory of footwear that have an effect on ft and might motive sickness like ulcer. A hot and humid environment is factors for the development of virus and microbes. A high pressure in specific point of the insole increases the risk of these pathologies. There is a need to measure all these parameter simultaneously in a daily shoe for feet's disease prevention.. Currently, tests are underway for variable pressure applied in the required range and the same for variable size of foot sole. The developed system is flexible and portable for field studies and also advantageous due to large memory size, dynamic recording of pressure and no fear of foot step modification.

2. Literature survey

2.1 An Early Detection System for Foot Ulceration in Diabetic Patients

The patient likely suffers from some degree of peripheral neuropathy, the device must be able to sense the things that he or she cannot. There are numerous diffused caution symptoms and symptoms that precede ulcer formation. The two most notable of these warning signs are inflammation and



CORRELATED RECONSTRUCTION OF CLUSTERS IN MOBILE WSN USING SOFT COMPUTING TECHNIQUES

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Abstract

WSN is a wireless sensor network that contains distributed self-governing devices spatially using sensors to monitor all environmental and physical conditions. Due to energy consumption among nodes, WSN has challenges with better utilization of energy and system enhancement. Cluster Algorithm is employed to prolong network lifetime and balance energy consumption. Many designers and researchers focus on architecture and algorithm that allow energy efficient operation of WSN. Therefore, we proposed an energy efficient routing using hybridization of Glowworm Swarm Optimization (GSO) and Cuckoo Search Algorithm (CSA) with fuzzy inference system. Glowworm Swarm Optimization (GSO) algorithm can efficiently capture all the maximum multimodal function. GSO algorithm was used simultaneously to find solutions of multimodal function optimization problem in various fields in the recent industry such as network, robotic, science and engineering.

Keywords: Energy consumption, Network Life time, Cuckoo Search Algorithm, Cluster Head

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1. INTRODUCTION

The WSN consists of smart sensor nodes which detects data and collects data from the confined condition and forwarding the data to the base station. The most emerging issues in Wireless sensor network communication are energy consumption and providing security for the data. The interaction of local nodes with their environment which is a population of agents motivated from the social behavior of living creatures such as Swarm Intelligence. The main objective is to increase the energy efficiency by decreasing energy consumption of the sensor nodes and to enhance the lifespan of a network, thus striking a balance in the power consumption of each node for battlefield surveillance.

The sensor nodes acts as both transmitter and receiver, it usually scattered in a sensor field where each of the sensor nodes has the capability to collect data and route data back to the sink/gateway and the user at the other end by a multi-hop infrastructure less architecture through the sink. They use their processing capabilities to carry out simple calculations and transmit only the required partially processed data. The WSN communicate with the task manager/end-user via the Internet, satellite and any type of wireless network (like Wi-Fi, mesh

networks, cellular systems, WiMAX, etc.), making Internet of Things possible.

Soft computing is a group of fine ways grounded on natural selection and artificial intelligence that provides cost effective and quick result to a veritably complex problems for which logical phrasings don't live. Soft computing that aims at chancing error-free approximation which gives a robust, computationally effective and cost effective result saving the time. For future Internet of Things (IoT) applications, reducing energy consumption and prolonging the battery life of SNs have become compulsory. The power consumption of sensor nodes can be reduced by controlling the transmitted power of the wireless protocols. This control can be achieved through an accurate distance estimation between the nodes in the WSN. One method of reducing sensor node power consumption is by exploiting the location or distance between the nodes.

2. LITERATURE REVIEW

The author presented ESAC(1) which consists of detector bumps into a group of disjoint clusters. Each cluster group has a leader called cluster- head which is the knot among them with the topmost weight. Moreover,





IOT BASED DISASTER ALERTING SYSTEM FOR SMART CITY ENVIRONMENT

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Abstract: Natural Disasters have threatened mankind since history started. Due to geographic application installed on shelter place like school, college temple. The system can register the receivers such that rescue team to send the notification for help. By sending the current position obtained by GPS and including shortest path of shelter or safe zone on the map of the application. Disaster recovery operations are extremely challenging and place significant demands on multiple resources, including local and international location and environment change, there are many vulnerable countries to natural disasters. The countries also lack effective disaster preparedness system to confront natural disasters. In addition, the peoples face difficulties in finding safe area or shelter place prior to the occurrence of natural disasters. For this reason, To have proposed a disaster management system and evacuation system for people using IOT device. The system is implemented on black box module because of the burgeoning growth of smart city. The black box device without emergency response personnel, non-governmental organizations, and the military. In the immediate aftermath of a disaster, one of the most pressing requirements is for situational awareness (SA) so that resources, including personnel and supplies, may be prioritized to have the most impact and help those in the most need. As the recovery operations continue, the SA needs to be continuously updated based on changing conditions in the affected areas. There are many sources of information to provide SA, including reporting by the victims of the disaster as well as observations made by responding personnel. In this context, SA can be significantly enhanced via information obtained from Internet of Things (IoT) devices, especially in a smart city environment. This paper explores the potential to exploit Smart City IoT capabilities to help with disaster recovery operations.

Index Terms - Internet of Things, Accelerometer sensor, Vibration sensor, Disaster Management, Alerting System, Smart city.

1.Introduction

Internet-of-Things (IoT) technologies in the past decade have matured both in the hardware and software aspects for large-scale deployment. Amongst IoT, the Smart Cities Concept is also taking shape. Pilot s and implementations in multiple cities are trying to find out the feasibility and applicability of Smart City Information and Communications Technology (ICT). IoT assets along with the legacy assets are essential for Smart City ICT implementations. With the evolution of Smart Cities and concentration of people in the cities, it becomes necessary to be ready for future Humanitarian Assistance and Disaster Recovery (HADR) operations. But the huge void in heterogeneous IoT and legacy technologies create a big hurdle in establishing and handling the HADR operations. This aim of this PhD is to investigate the interoperability aspects amongst the various IoT technologies and Smart City concepts. The goal is to create a framework and an architecture for allowing the interoperable operation of ICT assets in a Smart City environment.

In this paper^[1], situational awareness can be significantly enhanced via information obtained from Internet of Things (IoT) devices, especially in a smart city environment. This paper explores the potential to exploit Smart City IoT capabilities to help with disaster recovery operations. Disaster mitigation is very important in order to reduce the number of victims of both life and material. Alertness in disaster mitigation is urgently needed in every area in all countries of the world, especially in Indonesia. Embedded device technology specifically designed and programmed to detect disasters such as earthquakes, tsunamis, floods and landslides, storms and hurricanes. The sensors are used according to the type of disaster will be detected. The system will be built this serves as an early warning system that will provide early warning against floods and landslides were predicted would happen. The system can detect floods and landslides in accordance with a sensor mounted on a

Performance Comparison of Pre-processing Techniques for Image Denoising

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Abstract: *The main objective of this survey is to compare different nonlinear filtering techniques for denoising and enhancing digital images for multiple noise environments. In this Survey, the various noise conditions are studied and some efficient nonlinear filters are designed to suppress bipolar fixed-valued impulse noise quite effectively. Efforts have been made to develop some noise removal techniques.*

Keywords: salt and pepper noise, random-valued impulse noise and multiple noise, Switching Mechanism

I. INTRODUCTION

Image Processing is a technique to enhance raw images received from cameras/sensors placed on satellites, space probes and aircrafts or pictures taken in normal day-to-day life for various applications. Various techniques have been developed in image processing during the last four to five decades. Most of the techniques are developed for enhancing images obtained from unmanned spacecrafts, space probes and military reconnaissance flights. For a meaningful and useful processing to have very good visual display in applications like television, photo-phone, etc., the acquired image signal must be denoising and made enhanced image. Image denoising (filtering) and enhancement come under a common class of image processing tasks known as image restoration.

The present day state-of-art technology offers very high quality photo sensors, high quality electronic circuitry, e.g., system on chip (SOC), and high quality channel as well. Therefore, the noise level has drastically reduced. In the last two decades, many researchers have attempted to develop filters to high density SPN. But the filters that are quite efficient at high noise levels don't perform so well at low noise levels. Therefore, it is very important to design and develop highly efficient image filters that suppress low power noise as well as high power noise quite effectively. Further, it is essential to develop efficient filters to suppress multiple noise since the practical systems suffer from such a type of noise.

A linear filter is implemented using the weighted sum of the pixels in successive windows. Nonlinear digital filters for images are described by J. Astola and P. Kuosmanen and Ioannis Pitas, Anastasioa [1 & 2]. Recently some intelligent adaptive techniques are analyzed and implemented. Digital images are highly contaminated by impulse noise. Nonlinear filters are widely used for denoising digital images. For that use of local min max operation had been implemented by Yasuo nakagava et al [3]. α -trimmed means and their relationship to median filters had been implemented by Bednar.J et al [4]. This paper explains the relationship between α -trimmed means and median filters derives a simple straightforward and fast algorithm. An Improved Non-local Mean Filter for Image Denoising had been investigated by Mingyue Ding et al [5]. Due to the drawback that the similarity is computed based on the noisy image, the traditional NLM method easily generates the artifacts in case of high-level noise.

The objective of any nonlinear filtering technique is to eliminate the noise and preserve the edge structures without losing the fine details of the image. The properties of median filters had been analyzed by Neal. C et al [6-10]. In this paper, necessary and sufficient conditions for a signal to be invariant under a specific form of median filtering . A new impulse detector for switching median filters had been presented by Shuqun Zhang et al [11-17]. This impulse detector is based on the minimum absolute value of four convolutions obtained using one dimensional Laplacian operators. Adaptive Two-pass rank order filter to remove impulse noise in highly corrupted image had been implemented by

Bridge Crack Identification and Monitoring Using IoT

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Abstract: The appearance and progression of cracks in a concrete bridge will negatively impact how safely people can use bridge structures. This paper develops an image pre-processing scheme combining multiple adaptive filtering and contrast enhancement based on the image processing technology of concrete crack, which can improve the removal effect of background noise and obtain the characteristic information of tiny cracks. This approach can better meet the crack detection requirement. Then, in order to retrieve the information about the crack edge and increase the positioning accuracy of the crack border, we developed a local adaptive technique of Otsu threshold segmentation and merged it with a modified Sobel operator for removing isolated noise spots. The target crack is also recognized, classed, and the feature data is calculated in accordance with the image feature of the bridge crack edge. The case analysis findings demonstrate that the detection algorithm's data processing accuracy can satisfy the actual engineering criteria for concrete bridge crack detection by processing data to a precision of 0.02mm.

Key Word: Multiple adaptive filtering, Contrast enhancement, Background noise, Local adaptive filtering, Otsu threshold segmentation.

I. INTRODUCTION

Engineering constructions, such as concrete surfaces and beams, are frequently subjected to fatigue stress and cyclic loading, which causes cracks to form on the surface of the structure. These fractures typically start at the microscopic level. The structure's cracks generate material discontinuities and a reduction in local stiffness. Early identification enables the implementation of preventative steps to stop potential failure and harm. The practice of finding cracks in buildings using various processing techniques is known as crack detection. There are two techniques to identify cracks. These two types of testing are destructive and non-destructive. Surface condition issues are assessed using the visual inspection and surveying equipment. The aim of the type, number, breadth, and length of cracks on the structural surface reveals the concrete structures' bearing capability and level of early deterioration. Instead of slower subjective old human inspection processes, automatic crack detection has been created for quick and accurate surface defect analysis. Thus, a more secure survey approach is adopted. Non-destructive testing is particularly successful with automatic fracture detection. It is challenging to make an unbiased assessment of degradation by manual inspection. Several non-destructive testing methods, including I infrared and thermal testing, (ii) ultrasonic testing, (iii) laser testing, and (iv) radiographic testing, can be used for automated crack identification.

II. EXISTING SYSTEM

In this study, a technique to find surface cracks in concrete bridge bottoms is proposed. It is based on digital image processing technology. As the technique is currently in the testing phase, the primary study topic is the image processing technology algorithm. There hasn't been a viable solution put out for the unique mechanical structure and control. It is not appropriate for edge detection and can only be used for offline crack detection. The process involves moving and scanning the area at the foot of the bridge, analyzing and determining whether there are cracks, automatically calculating various fracture characteristic values, and then saving the data. The technique for fracture identification and classification for subway tunnels presented in this work is based on the use of CMOS line scan cameras. In the experimental part, a thorough explanation of the image processing methods and the ideal parameter values is provided. The suggested strategy is simple to use and efficient. Although not limited to use in underground tunnels, the suggested image processing approach for fracture identification and classification may be appropriate for various state monitoring applications. Moreover, various uses of pattern recognition may be appropriate for the suggested distance-based form descriptor.

This study described a technique for detecting road cracks that offers fully autonomous road distress evaluation. Two-line scan cameras, a laser illumination system, and acquisition HW-SW are installed in a vehicle that will also store the digital pictures that will be utilized in an off-line procedure to locate road fractures. In order to make the identification procedure easier, pre-processing is first carried out to both improve the linear characteristics that may match with cracking and smooth out the pavement's texture. In order to do that, a histogram analysis is carried out, producing a reduced size picture. Next, non-crack features detection is used to distinguish regions of the pictures that include joints, sealed cracks,

SMART TECHNIQUE FOR GARBAGE DISPOSAL USING EMBEDDED SYSTEM

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ABSTRACT

Waste management is a complicated task all over the world recently. Consequently there is need of well-organised recycling process for separating the degradable and biodegradable wastes. The biodegradable waste products comprises of organic materials like fruits, leaves, vegetables, etc., which can be decomposed by micro-organisms and living things in the soil. The decomposed materials are converted into the carbon dioxide and other simple organic molecules. The waste management also includes some inorganic matters which can be decomposed by bacteria and micro organisms lived in the soil. These type of materials have the characteristics of nitrogen and its by-products.

The microorganisms are growing in non living bodies, cause disease and produce harmful gases which create lung problems to human beings. The non-biodegradable products such as plastic, glass and batteries are don't break easily and if they are not handled properly, then it will be converted as non- biodegradable waste which cause pollutions like air pollution, water pollution, soil pollution and create harmful effects to animals.

To overcome this problem we introduce automatic garbage maintenance[1] with help of Image processing technique by capturing the image with the help of camera which will be attached at end of equipment. So, while we capture the image then the image processing will compare it with the predetermined pictures were the wastes will be directed to their respective bins.

KEYWORDS-- Waste management, Image processing, Lab view , Arduino controller

BASED ON PT-FUNCTIONALIZED HIERARCHICAL ZNO MICROSPHERES, THE TRIETHYLAMINE GAS SENSOR

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ABSTRACT

Triethylamine (TEA) gas monitoring and detection are essential for ensuring both environmental and human safety. The TEA gas sensor, however, has a poor response rate. Unique nanosized-Pt-decorated hierarchical ZnO is presented here. There were made microspheres. Compared to pure ZnO microspheres and Pt-c-ZnO (deposited Pt nanoparticles), the resultant Pt-ZnO displayed the best TEA gas sensing characteristics, in terms of decreased detection limits on commercial ZnO). Greater selectivity, a higher operating temperature (200 C), and long-term stability. Notably, Pt-reaction ZnO's value in the direction of 100 ppm TEA was as high as 242, 50 and 16 times higher than those of clean ZnO and Ptc- respectively, a ZnO sensor. In addition to structural advantages, the superior attributes were attributed to ZnO and Pt work together in harmony. The electron-sinker effect of Pt provided a full explanation of the sensing mechanism. Density function theory (DFT) simulation and the Kelvin probe provided more confirmation. Furthermore, temperature programmed desorption (O₂-TPD) and DFT simulation showed that this ideal sample had higher surface oxygen activity and decreased TEA adsorption energy. Pt-ZnO is a good contender for TEA gas sensors based on the aforementioned benefits. This work is significant because it creates a new perspective on how performance enhancement works.

Keywords: Pt-ZnO microspheres Triethylamine sensor High response Gas sensing mechanism

1. Introduction

Triethylamine (TEA), a colourless, transparent liquid with a potent ammonia-like odour, has been utilised as raw materials, catalysts, and solvents. Materials used in the field of organic synthesis [1,2]. Additionally, numerous According to studies, TEA is released by deceased fish and other marine life. and over time, its concentration progressively rises [3,4]. Consequently, to evaluate the calibre of marine food, TEA can be employed as a chemical tracer. Life. However, it has a major negative impact on human health. After a large exposure, headache issues, gastroenteritis, and pulmonary Death and edoema both happen [5, 6]. Additionally, verifiable evidence implies that by combining with air, it can endanger our ecosystem, which, when exposed to fire sources, even explodes. Consequently, it's to use techniques with high sensitivity and selectivity to monitor TEA. Numerous spectroscopic tools have currently been used effectively in the very accurate detection of TEA.



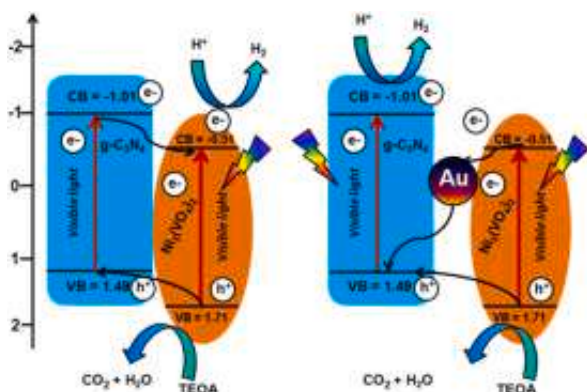
The charge transfer pathway of g-C₃N₄ decorated Au/Ni₃(VO₄)₂ composites for highly efficient photocatalytic hydrogen evolution

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GRAPHICAL ABSTRACT



ARTICLE INFO

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Hydrogen evolution

Cocatalyst free

Z-scheme

Surface plasmon resonance effect

ABSTRACT

The photocharge carrier separation and migration within the heterostructure interface plays a pivotal role in the photoelectrocatalytic hydrogen production and the photocatalytic degradation activity. Herein, a series of the 2D/3D g-C₃N₄/Ni₃(VO₄)₂ photocatalyst were successfully fabricated via a facile hydrothermal method. The prepared samples were characterized by scanning electron microscopy (SEM), scanning transmission electron microscopy (STEM), transmission electron microscopy (TEM), X-ray diffraction (XRD), ultraviolet-visible (UV-vis), Brunauer-Emmett-Teller (BET) surface area, and photoluminescence spectroscopy (PL) emission spectroscopy. The highest photocatalytic hydrogen production rate of g-C₃N₄/Au/Ni₃(VO₄)₂ was about 3345 μmol g⁻¹ h⁻¹, which largely beyond that obtained of g-C₃N₄/Ni₃(VO₄)₂ (501 μmol g⁻¹ h⁻¹), and pristine g-C₃N₄ (14 μmol g⁻¹ h⁻¹). The optimal apparent quantum efficiency was counted to be 6.8 % at λ = 420 nm and 1.1 % at λ = 600 nm. Moreover, the photocatalytic property of g-C₃N₄/Au/Ni₃(VO₄)₂ could remain unchanged almost with 50 h in 5 cycles. The improvement of photocatalytic H₂ yield is attributed to the result of rapid separation of photogenic carriers in space and surface plasmon resonance effect of Au nanoparticles.

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Tuning the morphology and size of NiMoO₄ nanoparticles anchored on reduced graphene oxide (rGO) nanosheets: The optimized hybrid electrodes for high energy density asymmetric supercapacitors



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ARTICLE INFO

Keywords:

NiMoO₄
Hydrothermal
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Supercapacitors
Energy storage device

ABSTRACT

In order to improve the capacitive performance of supercapacitors, NiMoO₄ electrode materials were successfully prepared by a simple and low cost hydrothermal route, and the morphology, microstructure and properties of the materials were successfully optimized by adding reduced graphene oxide (rGO). Electrochemical and sophisticated physical property tests are used to examine the qualities of items. As a supercapacitor electrode material, the NiMoO₄/rGO composite performed admirably. The specific capacitance reached 2056 Fg⁻¹ at a current density of 2 Ag⁻¹, which is greater than standard NiMoO₄ at the same current density (788 Fg⁻¹). After 1000 charge/discharge cycles, NiMoO₄/rGO retains 91.1 % of its initial capacitance. NiMoO₄/rGO composites can be used in asymmetric supercapacitors, and the asymmetric supercapacitor device offers a high power density (60.2 Whkg⁻¹) and energy density (750.5 Whkg⁻¹) when used as the positive electrode and activated carbon as the negative electrode. A combination of mesoporous-NiMoO₄ nanoparticles with a high specific surface area and good interaction with conductive rGO is responsible for the improved electrochemical performance of NiMoO₄/rGO.

1. Introduction

Recent population growth has made the energy crisis an overwhelming obstacle. The traditional fossil energy has the benefits of being easily accessible, having a consistent price, and having a complete industrial chain, but the mining and use of these resources severely pollute the environment. It's also a serious ecological issue that can't be overlooked. The delayed restoration of fossil energy is another major drawback. Conventional fossil fuels may not be able to properly provide human requirements in this age of rapidly rising energy demand [1–3]. With its high power density, stable cycle efficiency, fast charging/discharging speed, and extended cycle life compared to ordinary batteries [4,5], research into supercapacitors (SCs) has become a hotspot at home and overseas. Since there has been a lot of work on supercapacitors, advancement has been limited by their poor electrode function and the high cost of specific materials [6–11]. In a supercapacitor, the electrodes are the primary building pieces that determine the energy storage capabilities.

Electrochemical capacitor electrodes based on metal molybdates (RMO₄, R = Ni, Zn, Co, Mn) have drawn a lot of interest. Nickel-

molybdate (NiMoO₄) is one of the metal molybdates that could be used as anode materials because of its abundance on Earth, sustainability with the atmosphere, and strong redox activity. Dual metal ions (Ni and Mo ions) in the NiMoO₄ have several oxidation states that facilitate highly reversible responses and so boost the capacity of the electrochemical supercapacitors. Supercapacitor electrode research has largely focused on NiMoO₄ because of the material's many desirable properties, including its low cost, abundance of resources, environmental protection, lack of waste, and high activity. The multi-oxidation state and increased theoretical capacity of MnMoO₄, ZnMoO₄, and CoMoO₄ materials have also garnered considerable interest [12]. Recent advances in these materials haven't prevented them from being used as electrodes in supercapacitors; however, their low electrical conductivity and small surface area imply that they typically exhibit poor rate performance, small capacitance, and restricted cycle stability during the redox reaction [13,14]. This severely limits their potential for widespread industrial use in pseudocapacitors. Therefore, the design of a new composite electrode material, which has a synergistic effect between different electrode materials and good electrochemical properties, has aroused great interest of the vast number of

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Grid-Connected Dual PV Management and Reliability Improvement based on Back Propagation Neural Network (BPNN-PSO)

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Abstract

A single-phase grid-connected Photovoltaic (PV) system based on the Maximum Power Point Tracking Perturb and Observe Algorithm (P&O) technique MPPT. Due to interactions between different semiconductors and variable loads, the input source contains harmonic distortion, voltage sags and surges, and other power quality problems. As a solution, the Grid-connected Photovoltaic (P.V.) and neural network system for boosting electricity quality was proposed. The P&O-based MPPT technology addresses partial shadow issues and other imbalanced components that commonly affect PV arrays. The system consists of two PV panels connected in series, with each PV cell having identical attributes. This PV array's interaction with various irradiation patterns can be used to anticipate the PV array in question. The Back Propagation Neural Network (BPNN-PSO) technology has been proposed for lowering the Total Harmonic Distortion (THD) of PV array systems while increasing convergence and accuracy rates.

Keywords: Grid, dual PV management, back propagation neural network (BPNN-PS).

1. INTRODUCTION

Grid-connected output systems are designed to transform as much solar energy into useful power as feasible. Two recommended strategies are the Back Propagation Neural Network (BPNN-PSO) and the perturb and observe method. (P&O) In several conditions, the algorithms supply the reference voltage to the DC link controller. This solution, which utilizes a BPNN-PSO-based algorithm and a specified number of power evaluations of the PV system, automatically detects the maximum power point of the dual PV array.



FREQUENCY STABILITY ANALYSIS OF THERMAL POWER SYSTEM WITH DIFFERENT STEAM CONFIGURATIONS

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Abstract:

The load frequency control (LFC) of a single-area thermal power system is provided in this study. An evolutionary method known as ant colony planning is used to enhance the features of the proportional-integral-derivative (PID) controller, a typical industrial auxiliary controller (ACO). Three cost functions are looked at to raise controller gain values. This study takes into account three different steam configurations in addition to integral absolute error (IAE), integral temporal absolute error (ITAE), and integral square error (ISE) (non-reheat turbine, single-stage reheat turbine, and double-stage reheat turbine). The effectiveness of the suggested approach is further demonstrated by including non-linearity (Generation Rate Constraint, Governor Dead Band, and Boiler Dynamics) into the same power system and changing the value of Step Load Perturbation (SLP) in each of the three steam configurations. The operation of electricity systems under diverse conditions is investigated using time domain analysis.

Keywords: Load Frequency Control (LFC), Proportional-Integral-Derivative (PID), Integral Square Error (ISE), Step Load Perturbation (SLP)

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1. INTRODUCTION

The Load Frequency Control (LFC) approach is used in electric power networks to control tie-line exchange schedules, spread the load among some of the generators, and keep the frequency generally steady. The power system urgently needs load frequency management because if the duty cycle drops below 47.5 Hertz or rises over 52.5 Hertz while the average frequency is 50 Hertz, the turbine blades might be harmed and the generator could stall. The models below illustrate how to regulate load frequency in a power system. Two significant components that alter when transient power demand is applied (Load Frequency Control (LFC)) are area frequency and tie-line power exchange.

Since the goal of load frequency control (LFC) is to lessen this variation, it is strongly connected to the aforementioned components. It's important to keep the stable condition at the null position. As a result, practical solutions were created, such as Active Disturbance Rejection Control (ADRC), which makes usable control easier. Active and reactive power are primarily responsible for the major split between frequency and voltage in the power system. Voltage depends on reactive power, whereas frequency depends on active power. Load frequency management is the umbrella term for the coordination of active power and frequency regulation. There



Certain Analyses on Static Compensated Voltage and Frequency Modulation in the Wind Energy System using the Solar PV Interface QZSI Impedance Source Network

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Abstract

The generation of electricity from wind and solar Photovoltaic (PV) systems is entirely dependent on weather conditions and variable nature causes output will sag and swell. As a reason, the requirement for efficient techniques for energy transmission and distribution networks is becoming increasingly critical. In the proposed system Quasi Impedance Source Inverter (QZSI)-based Static Compensator (STATCOM), is used to improve power quality in hybrid distributed power generating systems. The Photovoltaic (PV), Wind Energy Conversion System (WECS), and battery energy storage system are all components of the distributed power generating system. DFIG is made up of stator windings that are directly linked to the fixed frequency and voltage-based converters that are allowed directly in rotor windings. The phrase doubly fed refers to the fact that the stator voltage is obtained from the mains even though the rotor voltage is generated by the power converter. Each unit is linked to a DC Bus parallel to the battery to provide backup power. All three units are linked in series by multiple programmable switches for PWM, which are controlled by a DC voltage regulator of an MPPT (Maximum Power Point Tracking) Based Swarm Integral Neural Controller technique controller. The module is a series connection of two or more sources with high-frequency switches attached between the source converters to obtain varied voltage levels as required by the application.

The output result of sag and swell in large transmission networks can be reduced, and the fluctuation decreased by the usage of controller technique can be improved by power quality-based simulation using MATLAB tool. The proposed strategy decreases the stator and rotor over-currents, electromagnetic torque oscillations, and DC-link over-voltage and also supports grid voltage by supplying



Article

Load Frequency Control Assessment of a PSO-PID Controller for a Standalone Multi-Source Power System

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Abstract: The performance of load frequency control (LFC) for isolated multiple sources of electric power-generating units with a proportional integral derivative (PID) controller is presented. A thermal, hydro, and gas power-generating unit are integrated into the studied system. The PID controller is proposed as a subordinate controller to stabilize system performance when there is a sudden demand on the power system. The particle swarm optimization (PSO) algorithm is used to obtain optimal gain values of the proposed PID controller. Various cost functions, mainly integral time absolute error (ITAE), integral absolute error (IAE), integral squared error (ISE), and integral time squared error (ITSE) were used to optimize controller gain parameters. Furthermore, the enhancement of the PSO technique is proven by the performance comparison of conventional, differential evolution (DE) algorithm- and genetic algorithm (GA)-based PID controllers for the same system. The results show the PSO-PID controller delivers a faster settled response and the percentage improvement of the proposed technique over the conventional method is 79%, over GA is 55%, and over DE is 24% in an emergency in a power system.



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Keywords: differential evolution algorithm; genetic algorithm; particle swarm optimization; integral time absolute error; PID controller; cost function; load frequency control

1. Introduction

The electric power system consists of both power production and distribution, which is the power generation on the users load demand. As a result of globalization and technological advancement, the demand for electricity from customers is accumulating daily. To fulfill load demand, the generating capacity is increased by constructing new power plants and upgrading existing ones. When implementing a sophisticated power network, the power grid has several issues, such as voltage and frequency deviation. Consumers use electricity in a nonlinear manner. As a result, the power production varies proportionally with load demand to ensure system performance stability. When a system or any interconnected system has a rapid increase in power demand, it impacts the stability of the whole power-generating unit.

The frequency is a crucial factor in the quality of the power system, and the LFC method addresses the issue of frequency variation. To execute the LFC scheme, a secondary controller must be included in the system to achieve greater performance and recover the given power supply [1,2]. The controller gain must be optimized due to the inability of the secondary controllers to reach the desired result. In this study, various optimization strategies were designed and used by the literature research to improve the controller gain settings. In the following, the response of secondary controllers and optimization strategies that have been implemented and explored are discussed.

Stability Control Analysis Of Standalone Nuclear Power System With Pid Controller

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Abstract

This project discussed about the performance analysis of Load Frequency Control (LFC) of single-area nuclear power systems. The LFC is achieved by the support of a Proportional Integral Derivative (PID) controller as implemented as a secondary controller. The controller gain values are tuned by the conventional tuning method (trial and error). During unexpected power demand occurs in the power system, the frequency in the system is oscillated from the standard limit. The PID controller helps to control the oscillation and bring back the frequency to standard. The gain values are tuned with different cost functions (Integral Absolute Error (IAE), Integral Time Absolute Error (ITAE) and Integral Square Error (ISE)). The conventional – PID controller provides better time domain specification.

1. INTRODUCTION

Any power generating plant's power systems are operated and controlled in large part by automatic generation control, often known as load frequency control (LFC) or AGC. Examining the effectiveness and consistency of the power supply carefully is crucial when there is a sudden or ongoing load disruption in the process. Power plants are coupled by tie-line to get acceptable power quality, including nuclear power systems, to satisfy the aforementioned standards.

The two main objectives of Load Frequency Control (LFC) are

1. To maintain the real frequency and the desired power output (megawatt) in the interconnected power system.
2. To control the change in tie line power between control areas.

2. PREVIOUS RESEARCH WORK

For load frequency control of an empowered power generation system that includes numerous autonomous generation facilities such as diesel energy generators, solar energy modules, wind turbine generators, and fuel cells, along with energy storing units, an improved Sine Cosine Algorithm (SCA) based Adaptive Fuzzy Aided Proportional Integral Derivative (AFPID) controller is proposed. Flywheel and battery energy storage systems are the available devices for storing energy. The suggested controller's response is contrasted with that of a proportional integral derivative controller calibrated using a sine-cosine algorithm and an integral time total error

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Dear Gokulkannan. K, Balaji. G, Muralibabu. B, Ramachandran. S, Surendiran. S, Rathinam. A

It's our pleasure to inform you that, after the peer review, your paper,

Title: “Effective Evaluation Technique For Using A Photovoltaic System Based On A Fly-Back Converter To Improve Power Quality”

has been ACCEPTED with content unaltered to publish with **Scandinavian Journal of Information Systems| eISSN 1901-0990**.

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Again, thank you for working with Scandinavian Journal of Information Systems| e-ISSN: 1901-0990. I believe that our collaboration will help to accelerate the global knowledge creation and sharing one step further. Scandinavian Journal of Information Systems| e-ISSN: 1901-0990 looks forward to your final publication package. Please do not hesitate to contact me if you have any further questions.

Sincerely,



Editor-in-Chief

Scandinavian Journal of Information Systems



Short communication

Shape-controlled synthesis of polypyrrole incorporated urchin-flower like $\text{Ni}_2\text{P}_2\text{O}_7$ cathode material for asymmetric supercapacitor applications

R. BoopathiRaja^a, S. Vadivel^b  , S. Rathinavel^c, M. Parthibavarman^a, M. Ezhilarasan^a[Show more](#)  Share  Cite<https://doi.org/10.1016/j.inoche.2023.110634> [Get rights and content](#) 

Abstract

A new $\text{Ni}_2\text{P}_2\text{O}_7$ @Polypyrrole composite synthesised using an abundant method can effectively enhance electrical mobility during electrochemical processes in supercapacitor applications. In this study, we generated bare $\text{Ni}_2\text{P}_2\text{O}_7$ and $\text{Ni}_2\text{P}_2\text{O}_7$ @PPy nanocomposite nanomaterials using hydrothermal and chemical polymerization methods. The crystalline phase, morphological, and textures of the samples were investigated using XRD, FESEM, XPS, and BET surface analysis. A number of approaches, such cyclic voltammetry (CV), Galvanostatic charge/discharge, and electrochemical impedance spectroscopy with a 2M KOH liquid electrolyte, were used to study the electrochemical behaviour of electrodes, including capacitive, cyclic, and resistive properties. The capacitive and cyclic performance of composite $\text{Ni}_2\text{P}_2\text{O}_7$ @PPy electrode exhibits high specific capacitance of 498 Fg^{-1} and long cyclic stability of 97.4 % after 10,000 cycles. The capacitance contribution of bare and composite electrodes at different scan rates were evaluated using the Trasatti method, which yields 52 % and 70 % at low current density of 1 Ag^{-1} , respectively. The fabricated ASC devices offer electrochemical results of the high specific capacity of 79 Fg^{-1} at 1 Ag^{-1} , cyclic stability of 99.3 % retention after 10,000 cycles at 5 Ag^{-1} , with the energy density of 41 Whkg^{-1} at the power density of 1175 Wkg^{-1} for 1 Ag^{-1} .

Graphical abstract

The Assembled asymmetric cell was using polypyrrole incorporated urchin-flower like $\text{Ni}_2\text{P}_2\text{O}_7$ composite as cathode and activated carbon as Anode with 2M PVA/KOH gel electrolyte under Swagelok instrument. The Assembled ASC cell exhibits high specific capacity of 79 Fg^{-1} at 1 Ag^{-1} , cyclic stability of 99.3 % retention after 10,000 cycles at 5 Ag^{-1} , with the energy density of 41 Whkg^{-1} at the power density of 1175 Wkg^{-1} for 1 Ag^{-1} .

Research article

Hierarchically porous bowknot-like sodium doped $\text{Ni}_2\text{P}_2\text{O}_7\text{-Co}_2\text{P}_2\text{O}_7$ with improved supercapacitor performances

Applied Surface Science, Volume 465, 2019, pp. 763-771

[Show abstract](#) 

Research article

$\text{Ni}_2\text{P}_2\text{O}_7$ micro-sheets supported ultra-thin MnO_2 nanoflakes: A promising positive electrode for stable solid-state hybrid supercapacitor

Electrochimica Acta, Volume 319, 2019, pp. 435-443

[Show abstract](#) 

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Hybrid Based Climatology Lab For Airports

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Abstract—Automatic Advanced Landing System is most essential and required for the most modern airports to reduce down time of activities and to improve quality air traffic. We would like to integrate the existing system, which is widespread in the airports today and leads to misguiding of aircrafts. We would like to present an economic affordable solution for perfect takeoff and Landing System for airports with physical ambient conditions of the airport with audiovisual networking. To have a reality demonstration of our idea, we have employed the state of art Embedded Controller Technology along with associated hardware required for input and output.

We would like to develop angular position of the aircraft from mid of runway, demonstration of diagonal antenna function, Rotation technique of Radars, Landing angle of an aircraft, ambient parameters like Temperature, Humidity, Wind Speed, Wind Direction and much more. For audio, visual effects, multimedia will be used along with visual basic software. We would like to develop an auto pilot system during highjack time using communication analysis, delink of communication and reception of communication in other such base station. A real time hand move model will be develop for this project.

Keywords—solar system, wind power, GSM, visual basic, smart grid.

I. INTRODUCTION

Meteorological Stations (AMSs) situated at various national and international airports of the country. The MWOs are catering the needs to flights in their respective flight information region (FIR). Regional Specialized Meteorological Centre (RSMC), IMD New Delhi also serves as one of the ICAO designated Tropical Cyclone Advisory Centers (TCAC) to provide Tropical cyclone advisory to the MWOs in India and neighboring countries for safety of aircraft movement in disaster weather. The technical coordination and overseeing of the functions of the aviation meteorological offices in India is done by Central Aviation Meteorological Division (CAMD) functioning at DGM New Delhi. The web based information dissemination system known as On-line Briefing System (OLBS) of IMD is being maintained by the meteorological offices functioning at MWOs Chennai and New Delhi, through which the registered users can directly download the forecast products as desired. Apart from the primary communication channels of AAI, the department has all advanced communication modes for the dissemination of aviation information.

The aviation industry in India has emerged as one of the fastest growing industries in the country during recent years. New airports are coming up under RCS UDRAN. So Aviation sector has witnessed rapid growth both in terms of density of air traffic and number of airports. This trend is expected to continue in coming years also. In order to meet demands of growing aviation sectors & to discharge quick quality work, the need for a consolidated Standard Operational Procedure (SOP) on aviation meteorological services for ready use by aviation meteorological offices was felt necessary and hence the first edition of SOP on aviation meteorological services in India has been brought out (March 2021). The Areas of SOP are restricted to procedural aspects of Meteorological service to aviation. It is hoped that the information it contains will be very useful to the officials working in operational field.

II. LITERATURE SURVEY

Weather affects aviation activities at various stages of operation. In order to ensure safe operations in all-weather situations, National Meteorological Services throughout the world are obliged by law to make meteorological observations & forecasts, to establish and maintain monitoring and warning systems in their countries.

The objective of Aeronautical Meteorology is to contribute towards the safety, economy, regularity and efficiency of air navigation.



DESIGN AND PERFORMANCE ANALYSIS OF SOLAR TREE IN SMART CITY

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Abstract: Solar Energy is accepted as a key resource for the future of the world. The utilization of solar energy could cover a significant part of the energy demand in the countries. One of the most popular example of utilized solar energy that is solar tree. Solar tree is a metal construction that resembles an actual tree. Solar panels are established on pinnacle of every branch. Generated power will be to be had to anybody and it'll be used for charging batteries of cellular phones and portable computers. The location around the solar tree would turn out to be an area in which college students and their buddies can gather to recharge their gadgets and, at the equal time, whilst they wait, exchange ideas, advices and their experiences with each other.

Index Terms: solar panel, battery, inverter, Long tower, LED.

1. INTRODUCTION

A solar cell (photovoltaic cell or photoelectric cell) is a solid state electrical device that converts the energy of light directly into electricity by the photovoltaic effect. The energy of light is transmitted by photons-small packets or quantum of light. Electrical energy is stored in electromagnetic fields, which in turn can make a current of electrons flow.

Assemblies of solar cells are used to make solar modules which are used to capture energy from sunlight. When multiple modules are assembled together (such as prior to installation on a pole-mounted tracker system), the resulting integrated group of modules all oriented in one plane is referred as a solar panel. The electrical energy generated from solar modules, is an example of solar energy.

Photovoltaic is the field of technology and research related to the practical application of photovoltaic cells in producing electricity from light, though it is often used specifically to refer to the generation of electricity from sunlight. Cells are described as photovoltaic cells when the light source is not necessarily sunlight. These are used for detecting light or other electromagnetic radiation near the visible range, for example infrared detectors, or measurement of light intensity.

2.THE PROPOSED SOLAR TREE SYSTEM

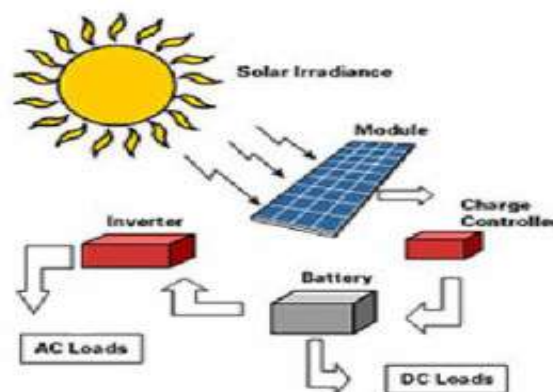


Fig.1 Block Diagram of Proposed Method

2.1 How Solar Cell Works

Solar cells, which largely are made from crystalline silicon work on the principle of Photoelectric Effect that this semiconductor exhibits. Silicon in its purest form- Intrinsic Silicon- is doped with a dopant impurity to yield Extrinsic Silicon of desired characteristic (p-type or n-type Silicon).When p and n type silicon combine they result in formation of potential barrier.

Working of Solar cells can thus be based on two crystalline structure

- Intrinsic Silicon



AC TO DC CONVERTER FOR ELECTRIC CAR APPLICATION

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ABSTRACT

An AC-DC converter is an essential component in the electric vehicle charging system that converts AC power from the charging station to DC power that can be used to charge the battery of the electric car. The converter typically uses a power electronics circuit that controls the power flow and voltage levels, allowing the charger to provide the optimal charging voltage and current to the battery. The converter can be either integrated into the vehicle or installed as a separate component in the charging station. The design of the AC-DC converter for electric car applications requires consideration of factors such as efficiency, power density, reliability, and cost. Additionally, the converter must comply with safety regulations and standards, ensuring that the charging system is safe for the user and the vehicle. The development of advanced AC-DC converter technology will play a critical role in the widespread adoption of electric vehicles, as it will enable faster, more efficient, and more reliable charging systems.

Keywords : AC-DC converter, Alternating current and Battery charging systems.

1. INTRODUCTION

An AC-DC converter is an electrical device that converts alternating current (AC) power to direct current (DC) power. This type of converter is commonly used in a variety of applications, including power supplies for electronic devices, battery charging systems, and motor drives. The basic operation of an AC-DC converter involves rectifying the AC input voltage to produce a pulsating DC voltage. This pulsating DC voltage is then filtered to remove the AC ripple and produce a smooth DC output voltage. The rectification and filtering process can be accomplished using a variety of circuit topologies, including diode rectifiers, bridge rectifiers, and capacitor-input filters. The efficiency of an AC-DC converter is an important consideration in its design and operation. The efficiency of a converter is defined as the ratio of the output power to the input power. In general, higher efficiency converters are more desirable, as they waste less power and generate less heat. The efficiency of an AC-DC converter is influenced by several factors, including the input voltage, the load current, and the conversion topology. One of the most common applications of AC-DC converters is in power supplies for electronic devices. These converters are typically designed to provide a regulated DC output voltage from an AC input voltage. The output voltage may be fixed or adjustable, depending on the specific application. Power supplies for electronic devices may be linear or switch-mode, with switch-mode designs typically offering higher efficiency and smaller size. Another important application of AC-DC converters is in battery charging systems. In these applications, the converter is used to convert AC power from the grid into DC power that can be used to charge a battery. The efficiency and charging speed of the converter are critical considerations in battery charging systems, as they directly impact the time required to charge the battery. AC-DC converters are also commonly used in motor drives, where they are used to convert AC power to DC power to drive a DC motor. Motor drives may be used in a variety of applications, including electric vehicles, industrial machinery, and robotics.

In these applications, the efficiency and power rating of the converter are critical considerations, as they directly impact the performance vehicle's battery of the motor. In electric vehicle applications, AC-DC converters play a crucial role in the charging process. When an electric vehicle is plugged into a charging station, the AC-DC converter is responsible for converting the AC power from the charging station into DC power that can be stored.



AUTOMATED SHOPPING CART

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ABSTRACT

Nowadays, buying and searching at huge malls is turning into a daily activity in subway cities. We can see large rush at malls on holidays and weekends. The rush is even a lot of once there are special offers and discount. People purchase totally different things and place them in trolley. After total purchase one needs to go to cashier for payments. The cashier prepares the bill victimization bar code reader that could be a time overwhelming method and leads to long queues at charge counters. This project targeted to minimize the Queue at a billing counter in a shopping complex. Smart Trolley does the same by displaying the total price of the product kept inside the cart. In this way the customer can directly pay the amount at the billing counter and leave with the commodities he/she has bought. The hardware is based on Arduino Uno, RFID Reader Module, RFID Card. It eliminates the traditional scanning of products at the counter and in turn speeds up the entire process of shopping, also with this system the customer shall know the total amount to be paid and hence can accordingly plan his shopping only buying the essential commodities resulting in enhanced savings. Since the entire process of billing is automated it reduces the possibility of human error substantially. Also the system has a feature to delete the scanned products by customer to further optimize the shopping experience.

Keywords: RFID card, Victimization bar code, Billing counter and Smart Trolley.

1. INTRODUCTION

Ever since the debut of wireless technology, electronic commerce has developed to such an extent to provide convenience, comfort, and efficiency in day-to-day life. Shopping mall is a place where most people from all walks of life will get their daily necessities ranging from food product, apparels, toiletries; gardening tools electrical appliances, and others. The numbers of little and enormous looking malls keep it up increasing over the years throughout the world because of the demand of the general public. Thus, the amount of advancement of shopping Centre system and infrastructure conjointly varies. Compared to some foreign countries' shopping mall system, there are still a plenty of spaces for improvement in terms of providing quality shopping experience to the consumers. Consumers often face many problems and inconvenience when shopping. These problems include worrying that the amount of money brought is not enough for paying all the items needed, insufficient information of the items that are for sale and also wasting time at the cashier. These are the issues that include worrying that the amount of money brought is not enough for paying all the items needed, insufficient information of the items that are for sale and also wasting time at the cashier. These are the issues faced by the customer. There are some existing ways to resolve the issues that are declared on top of however the effectiveness still takes into account corrigible. Examples of existing downside finding techniques are subbing the traditional approach of keying item per item by hand to the register with the technology of barcode scanning wherever the cost are 12 stored in the barcode, and also set up a client information counter to help the client if there are any enquiries about the items at shopping mall. Each product of shopping mall, super markets will be supplied with an RFID tag, to identify its type. Every cart contains PID (Product Identification Device). Specifically, PID contains a microcontroller, LCD, an RFID reader, and EEPROM. There will also be a centralized database from which we can give product recommendation to the customer. Current development in chip manufacturing technology increases practical approach for new applications. Fast growth in RFID technology is making impact on many industries. The centralized database will give product recommendation and information about the product on the LCD screen present on the shopping cart, which will help the customer in buying products. LCD can display characters, numbers, and graphics. LCD shows the running bill.



CONVERSION OF IC ENGINE TO ELECTRIC VEHICLE WITH BATTERY SAFETY SYSTEM

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ABSTRACT

The electric car plays a vital role in current technology due to its various features. There is a need for an effective transportation system, particularly four wheelers, due to overpopulation. The amount of fossil fuel being consumed to make petroleum products is rising. As a result, the price of petroleum items is steadily rising every day. Individuals frequently suffer as a result of the rising price of petroleum products. There are also new models of electric cars on the market that can run entirely on electricity stored in a battery, eliminating the need for fuel energy. As a result, lots of individuals are enthusiastically purchasing and using it. But, compared to a typical petrol car, an electric car is unable to travel farther, climb hills more easily, or run at its top speed. We presented a new electric car that addresses the flaw of existing cars in order to get over these issues with gasoline and electric cars. Both an internal combustion engine and an electric motor are used to power our car. The drives of internal combustion engines and electric motors operate independently of one another. The user has the option of selecting between the electric mode as the driving mode. The client can experience a dual mileage system with our car by using battery power. Our car has a regenerative braking mechanism installed, which results in a little amount of battery charging. Fast battery charging is not possible with electric cars, making it uncomfortable for the rider in an emergency. Yet, under our system, a user can work in fuel mode during an emergency, charge the battery during downtime, and then use. We provide a detachable electric fitting; client can use the same component for another model of petrol car. Also, we offer a battery overheating warning system and a theft alarm, which will undoubtedly help the user avoid fire. This car offers the rider excellent durability and high flexibility while requiring less maintenance. Our method will undoubtedly benefit the user with greater efficiency in the world we live in today, where there is a huge demand for gasoline.

Keywords: Battery, Petrol car, Electric Propulsion and Hybrid electric vehicle.

1. INTRODUCTION

The idea of employing electric power instead of fossil fuels as motive energy of vehicles is not new. Scientists and manufacturers have attempted to design an Electric Vehicle (EV) since long time ago. Robert Anderson had built the first electric carriage in 1839 and David Salomon developed an electric car using a light electric motor in 1870. Conventional electric vehicles have a central electric motor that actuates two or all four wheels of the vehicle. However, the in-wheel motor idea first introduced in 1884 by Wellington Adams who have built and attached an electric motor directly in the vehicle's wheel through complicated gearings. Since in an in-wheel motor EV individual control of each wheel is possible; better vehicle speed, torque and acceleration control can be achieved. Using in-wheel motor technology improves drive train efficiency, dynamic stability control and safety of electric vehicles. An electric car, battery electric car, or all-electric car is an automobile that is propelled by one or more electric motors, using only energy stored in batteries. Compared to internal combustion engine (ICE) vehicles, electric cars are quieter, have no exhaust emissions, and lower emissions overall.[1] In the United States and the European

SMART FAULT DETECTOR IN POWER LINE USING IoT

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ABSTRACT

In the recent days the major problem caused by EB people are the transmission line faults due to external disturbance like nesting of birds, fallen of objects in the transmission line etc is very difficult for the EB peoples to identify the false manually moreover it may take a whole day for the Restoration for this issue we came up with the solution in our project we are going to predator the false in the transmission line due to the external disturbance with GPS location and monitoring the live status of the transmission line by using the quantum camera with the help of raspberry pi and GSM module. we can monitor the live status of the transmission line. Here we are using image processing technique for the live monitoring with the help of CN and technique for the power supply we are using solar panel and for the power storage where using battery when the external disturbance occurs in the transmission line it automatically since and allotting message with the particular location to the connected mobile device by using this method we can easily identify where the fault occurs and it is very helpful for the EB people to identify the location where the fault occurs.

1.INTRODUCTION

Nowadays demand of electricity increases and coverage of the power line is getting larger in spite of the continuous improvement of power grid this application helps to overcome this issue. Transmission lines are exposed without any shielding or protection. The same time transmission lines are character in places where the operation and maintenance are difficult such as deep mountains and high altitude areas with horse environment which brings huge challenges to the operation and maintenance of transmission line in how efficiently it detects the status of transmission line and ensures the normal operation of the grid system has become an important search in power system

Power transmission system affects from many unexpected failures due to various causes. This Faults are unpredicted and it requires high maintenance main function is to protect the system and detect the fault and the location where the fault occurs. In the recent days electric power has high demand enormous factors that affects the transmission of electric energy. The main reason is a fault occurs due to the external disturbance which other affected the overall performance and stability of the grid. Medicine to that there is a necessary need to support the future operation like real time monitoring and control of smart grid integration to overcome the issues we here created IOB based transmission line fault monitoring which detects the fall on objects on the transmission line before the objects fallen on to the air so this devices helps to take the safety measures as early as possible transmission lines get easily in chapter by the external disturbance which leads to the power loss time and cost of rectification is high the proposed system mainly aims to make the safety measures for transmission line this device monitors the live status of the transmission line under detects any external objects seen near to the transmission line message to the connected mobile device.

By using this project we can easily identify the external disturbance of the transmission line and also detect the location where the fault occurs so we can easily take early and measures to overcome the issue because the system predicts the process of high false and lying the images where the time and cost involved in the rectification has to be neglected . For operating the system we here by given solar panel for the power supply and for the power storage we hereby fixed a battery

2.PROPOSED SYSTEM

The system mainly works based on image processing technique this is the most effective way for monitoring the transmission line The main advantage of this project here we used iot based real time technology used for continuous monitoring of the transmission line if any falls occurs in the transmission

WIRELESS TECHNOLOGY-BASED SMART STREET LIGHT WITH INTELLIGENT ENERGY

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Abstract

This project's core goal is to increase consumption while decreasing energy loss. The abundant solar energy that is available throughout the day and is stored in solar cells powers street lights continuously throughout the night. Dust detection, lighting on/off, and battery level SMS messages. Also, the system provides a mode of operation that uses less energy by changing the automation method. Due to a dark sensor and a light sensor, street lights have automatic "ON"/"OFF" functionality that allows them to turn on when necessary (i.e., when the surrounding area is dark) and turn off automatically if there is enough light. A vibration sensor, also known as a vibration detector, is used to measure the vibration levels in machinery for screening and analysis.

Keywords: Smart energy, LSPA, Sensors

1.1 INTRODUCTION

Global urbanization has led to advancements in digital technology and the creation of smart cities. The use of technology in lighting is one trend in the creation of smart cities. No matter how big or little, every town requires street lighting. Streetlights can lessen the risk of accidents occurrence and enlarge the welfare of both chauffeur and passerby by illuminating streets and public spaces at night. Recently, the use of light-emitting diode, bulbs in streetlights has significantly increased. detector, for inspection and evaluation. LED-based streetlight technology has a variety of benefits over conventional streetlight technologies including high-pressure sodium and low-pressure sodium) lights in terms of energy efficiency and optical luminosity. It is also environmentally friendly because it uses little electrical energy. It has a number of benefits due to its low electrical energy consumption, including uniform illumination levels offered by arrays of multiple LED chips, streetlight visibility provided by correlated color temperature, and increased visual performance provided by a high color rendering index.

1.2 INTELLIGENT STREETLIGHT

Even though we struggle to live in the "connected world" era, automated street lights are necessary. Efficiency and precision are guaranteed via automation. The essay focuses on automatic street lighting despite the fact that the current system has many shortcomings. Here, we're focusing on issues that necessitate manual lab ours. A user might run into troubles with maintenance, timers, connectivity, and displays, to name just a few.

Given that they ensure secure roadways, congenial common spaces, and in augmented ammunition in residences, trafficking, and city centers, streetlights are one of a city's strategic assets. However, they are often highly expensive to operate and, on average, use 40% of a city's electricity. As electricity prices rise and energy waste becomes a growing concern for the public and authorities, municipalities, highway companies, and other owners of streetlights must put control systems in place to dim the lights at the proper light level at the right time, automatically detect lamp and electrical failures, and enable real-time control.

By automatically timing and managing the street light switching, the automated system known as "Street Light Monitoring & Control" seeks to boost a particular industry's efficiency and accuracy. An innovative, cost-effective approach to street light control systems is presented in this research. When an object is present, a sensor-based system for controlling street light illumination turns on the lights at their



SMART ELECTRIC WHEELCHAIR FOR DISABLED PERSON

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ABSTRACT

Every wheel chair is manually operated to move in and around. However, a smart wheel chair brings independence and effortlessness to a person. A Smart Wheel Chair is mechanically controlled devices designed to have self-mobility with the help of the user command by using Bluetooth technology. This reduces the user's effort to drive the wheels of the wheelchair. Furthermore, this provides an opportunity for physically impaired persons to move from one place to another. There is a wireless communication between the human and the mobile. The design of a smart, motorized, controlled wheelchair by using Arduino controller. Proposed design supports Bluetooth system for physically differently abled persons incorporating manual operation. This system was designed and developed to save cost, time and energy of the patient. Wheelchair design based on mobile platforms, by means of Bluetooth technology, design and implementation of wireless remote-control solutions. The operation of the experimental model of our device is based on pairing the Bluetooth of the mobile to the Bluetooth module placed in the wheel chair. The Arduino Bluetooth control app acts as an intermediate to find movement of the human and the Arduino uno helps in assisting the Bluetooth and wheels movement according to the code. Mobile-operated wheelchairs are designed to provide increased independence and mobility for individuals with mobility impairments.

Keywords: Bluetooth system, Smart wheel chair, acquisition system and Mobile platforms.

1.INTRODUCTION

Smart Wheel Chair is mechanically controlled devices designed to have self-mobility with the help of the user command. This reduces the user's human effort and force to drive the wheels for wheelchair. Furthermore, it also provides an opportunity for visually or physically impaired persons to move from one place to another. The wheelchair is also provided with obstacle detection system which reduces the chance of collision while on the journey. Smart wheelchair has gained a lot of interests in the recent times. These devices are useful especially in transportation from one place to another. The machines can also be used in old age homes where the old age persons have difficulty in their movements. The devices serve as a boon for those who have lost their mobility. Different types of smart wheelchair have been developed in the past but the new generations of wheelchairs are being developed and used which features the use of artificial intelligence and hence leaves a little to tinker about to the user who uses the wheel chair. The project also aims to build a similar wheel chair which would have a sort of intelligence and hence helps the user on his/her movement. The wheelchair is the most ubiquitous equipment used by people with lower limb disability. It enables them some degree of freedom in mobility and independence as opposed to those with both upper and lower limb disabilities.

Most of the wheelchairs available in the market are manual in nature with some available with motorized option. Anything beyond that is custom made which is costly and not within the reach of most people. People with severe lower and upper disabilities have to resort to costly electronic controlled wheelchairs or be totally dependent on another person to move them around in their manual wheel. People with severe lower and upper disabilities have to resort to costly electronic controlled wheelchairs or be totally dependent on



BLOOD PRESSURE MEASUREMENT SYSTEM USING BLUETOOTH

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ABSTRACT

High blood pressure is a leading chronic disease and has become the main factor for many high-risk diseases such as diabetes, heart attack and cancer. At present there are more than hundred million hyper tension but only 44% of them have been diagnosed, we are going to design a blood pressure measurement system that is completely wireless and uses blood pressure sensors to collect the data of the patient and transfers the information via Bluetooth to a monitor where in the blood pressure of the patient along with the patient details are displayed by this process, blood pressure of the patient can be monitored continuously. The overall procedure can be done within a minute or not more than two minutes. Smart- phones are ubiquitous, so a blood pressure device comprising only the smart-phone can make diagnosis commonly available without the need to procure access to a special blood pressure device. This project reviews recent advances in blood-pressure measurements, specifically with focus on those implemented for smart-phones using Bluetooth.

Keywords: Blood pressure sensors, Oscillometric, Smart-phones and Bluetooth.

1. INTRODUCTION

Blood pressure measurement devices have become increasingly popular during the last decade as prices of these measurement devices have sunk to an appropriate level for ordinary consumers. The incorporation of automatic measurement features and ease of use have also contributed to the growing popularity of blood pressure measurement devices as a lifestyle device. However, such measurements devices are typically cuff based and based on indirect Blood Pressure (BP) measuring method using the detection of sounds. This method had been used for more than 100 years and has two major deficiencies. Firstly, the cuff grossly affects the measured parameter. Secondly, the method determines the blood pressure only at a single point of time. Oscillometric methods, applied in automatic home BP meters, apart from the aforementioned inadequacies, have also a built-in uncertainty, where it empirically calculates the systolic and diastolic values from the measured mean pressure in Tonometry the non-linear effect of the vascular wall decreases in bigger arteries. It is well known that good access to a “big” artery is at the wrist by palpating. Different mechanisms have been developed for the automatic noninvasive palpation on the arterial radials. In order to obtain a stable blood pressure signal, the tonometric sensor must be protected against movement and other mechanical artifacts. The Vascular unloading technique method is to unload the arterial wall in order to linearize this phenomenon with a counter pressure as high as the pressure inside the artery. Blood volume is kept constant by applying this corresponding pressure from the outside. The continuously changing outside pressure that is needed to keep the arterial blood volume constant directly corresponds to the arterial pressure.

This is the basic principle of the so-called “Vascular Unloading Technique”. For the realization, a cuff is placed over the finger. Inside the cuff, the blood volume in the finger arteries is measured using a light source and a light detector. The resulting light signal is kept constant by controlling the alterable cut off pressure. During systole, when blood volume increases in the finger, the control system



Sustainable Energy Development: Transitioning Towards a Cleaner Future

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Abstract: Sustainable energy development is crucial for addressing the pressing challenges of climate change, environmental degradation, and energy security. This paper explores the various aspects of sustainable energy development, including the use of renewable energy sources, energy efficiency measures, decentralized energy systems, and energy storage technologies. It discusses the benefits, challenges, and potential solutions associated with transitioning to sustainable energy, highlighting the importance of collaborative efforts among governments, industries, and communities. Through a comprehensive analysis of current practices and future prospects, this paper aims to provide insights into sustainable energy development and its potential to create a cleaner and more resilient future.

I. INTRODUCTION

A. Background

The world is facing multiple challenges in the energy sector, including climate change, environmental degradation, and the depletion of fossil fuel resources. As a result, there is an urgent need to transition towards sustainable energy development. Sustainable energy development focuses on meeting the energy needs of the present generation without compromising the ability of future generations to meet their own energy needs. It entails shifting from conventional, fossil fuel-based energy sources to cleaner, renewable alternatives.

B. Importance of Sustainable Energy Development

- 1) **Climate Change Mitigation:** The burning of fossil fuels for energy production is a major contributor to greenhouse gas emissions, leading to climate change. Sustainable energy sources, such as solar, wind, and hydroelectric power, produce significantly lower or zero emissions, helping to mitigate climate change impacts.
- 2) **Environmental Preservation:** Fossil fuel extraction and combustion have detrimental effects on air and water quality, ecosystem health, and biodiversity. Sustainable energy sources have lower environmental impacts, reducing pollution, habitat destruction, and resource depletion.
- 3) **Energy Security:** Reliance on fossil fuel imports can leave countries vulnerable to price fluctuations and geopolitical tensions. Sustainable energy sources, particularly those available domestically, enhance energy security by diversifying energy supplies and reducing dependence on imports.
- 4) **Economic Opportunities:** The transition to sustainable energy development presents opportunities for job creation, technological innovation, and economic growth. Renewable energy industries have the potential to generate employment across various sectors, drive local economic development, and foster a more resilient and sustainable economy.

C. Objectives of the Paper

The objective of this paper is to provide a comprehensive overview of sustainable energy development, exploring its various dimensions, challenges, and opportunities. By examining the use of renewable energy sources, energy efficiency measures, decentralized energy systems, and energy storage technologies, this paper aims to highlight the importance of sustainable energy and its potential to shape a cleaner, more sustainable future. Additionally, this paper will discuss collaborative approaches, policy frameworks, and key considerations necessary for successful sustainable energy development.

In conclusion, sustainable energy development is critical for addressing climate change, promoting environmental preservation, enhancing energy security, and unlocking economic opportunities. This paper aims to shed light on the multifaceted aspects of sustainable energy development, providing insights into its significance and potential solutions. By understanding the challenges and opportunities associated with this transition, stakeholders can work together to accelerate the adoption of sustainable energy practices and achieve a more sustainable and resilient energy system.

Single-Stage Buck-Boost Transformerless Inverter for Grid-Connected solar PV Systems

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Abstract: This paper presents a single-phase current transformer (BBTI) topology for single-phase grid-tied solar PV applications. In this topology, Input PV source shares common ground with neutral poles that eliminate leakage currents. In addition, the proposed topology has the ability to improve the tracking body peak power point even more variety of inputs PV voltage. Other features of the proposed topology is the supply uses only one energy-saving inductor symmetrical operation in two half cycles of the network. In addition, two of the five switches of the proposed topology operate at line frequency and therefore exhibit low commutation loss and three other switches are moved in any order process with low transmission loss. A simple sine-triangle pulse width modulation strategy is proposed for control the proposed inverter topology is analyzed throughout the work terms and explained in detail. The exam was conducted 300W laboratory prototype and key findings included in the paper presenting the proposed system providing high efficiency with low THD in output current.

I) Introduction:

Typically, PV-fed transformerless inverters suffer from leakage current [1]. To overcome the leakage current Researchers have developed many PV-fed transformerless inverter topologies and control strategies[2], [3]. For example, a central or off-grid inverter configuration connected to the grid consists of rows of PV panels that do not require a charging stage. However, low-voltage PV sources require a step-up stage, which reduces the efficiency of the system. Some studies have found DC-converted inverters fail during low-voltage PV supply or PV supply with shaded conditions [4], [5]. In order to have a wide application range of PV sources, it is recommended to have transformerless inverter topologies with the ability to boost the body [6] - [16]. From this point of view, it can be understood that current researchers prefer to propose a transformerless topology based on suspension [10] - [15]. The authors of [10] proposed to produce a fixed inverter topology suitable for large-scale PV system operation. However, the disadvantage of this topology is that it requires two separate PV sources for each half cycle of the output voltage. In [11], a transformerless topology current booster using only four switches and two input inductors is proposed. In this topology, each input inductor operates on a positive or negative half cycle, which can cause DC current injection. Another disadvantage of this topology is that the current THD is more than 5%, which is higher than the IEEE limit. The author [12] proposed a multiplexed topology with a single input inductor and switch 5. But this topology requires three additional diodes. Although this topology has a single input inductor, a large input capacitor is required to handle the peak power from the PV source. Another disadvantage of this topology is low voltage gain. [13] topology can be used for a Various PV systems. But eight switches and one inductor are required. The number of switches is high reduce efficiency, reliability and increase system costs. A body augmentation is proposed in [14] topology reduces the number of switches (ie five switches). However, this topology requires greater access capacity track solar PV peaks. The topology [14] is also used for various PV systems. In this topology, three switches are switched during each switching cycle, which increases the transmission loss. Another disadvantage of this system is the need for an inductor that carries a large current at the input, which increases the system size, cost, and efficiency. To reduce the number of switches, [15] researchers proposed the current topology with only two switches. But in this topology, there is no symmetrical operation in the positive and negative half cycles of the output voltage. Another disadvantage of this topology is that the voltage at the PV input is higher than the required voltage. Another topology [16] was proposed using a coupled inductor. This topology can provide high voltage gain output, but in this topology three switches are switched in one switching cycle reduce transmission losses and system efficiency. take advantage of the above defects This paper proposes an inverter topology without a step-up transformer with only five switches and a single input inductor at the input. The main advantages of the proposed topology are as follows:

1. Zero leakage due to common terminal shared between PV and grid neutral.
2. small current injection due to symmetry operating in positive and negative half cycles.
3. Fewer switches to manage the system is more reliable and highly efficient.
4. A variety of PV power tracking is possible having a body augmentation procedure.

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Aerodynamic performance characteristics of winglet configurations for the low and medium Reynolds number operations

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Three-dimensional numerical simulation-assisted parametric evaluation of winglet design for the small unmanned aerial vehicles (UAV) has been performed at low range and medium range of Reynolds number (Re) using commercial CFD package, Ansys-Fluent. By systematic variation of winglet parameters: sweep back and cant angle, the selection of optimum value of these parameters had to be selected for achieving better values of C_L/C_D and $C_L^{1.5}/C_D$ to minimize the drag and maximize the range and endurance. Out of these geometrical winglet parameters, by varying one winglet parameter while keeping other parameter as a constant, different sets of winglet configuration have been developed and the detailed representation of semi-wing with winglet geometry has been generated using Computed-Aided Design (CAD) tool. The computational domain has been solved for the Re of 0.9794×10^6 and 0.9794×10^5 using “3D Reynolds Averaged Navier–Stokes equations” along the turbulence model, $k-\epsilon$ for all wing configurations with and without winglet planned for this study. From Lift and Drag values for each angle of attack (AOA), C_L and C_D have been estimated for identifying optimum value of C_L/C_D and $C_L^{1.5}/C_D$ to have maximum range and endurance with minimum drag during the cruise operation of small UAVs in low and medium Re range operation. Out of all wing with winglet configurations considered here, the winglet with cant of 70° and 90° results in ending up with better aerodynamic performances for providing better range and endurance. At the same time, the change in sweep angle of the winglet does not show any variation, in turn there is a decrease in aerodynamic performance.

Keywords: Induced drag; L/D ratio; cant angle; endurance factor; sweep angle.

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1. Introduction

A need in developing Unmanned Aerial Vehicle (UAV) systems with long range and higher endurance realizes its importance because of its applications involving both

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DESIGN AND ANALYSIS OF AUTOMATIC ELECTRO MAGNETIC CLUTCH

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ABSTRACT

The kinetic energy dissipated in the brakes to accelerate the vehicle. This project is based on prototype model of Regenerative braking system using electromagnetic clutch. Regenerative braking results in an increase in energy output for a given energy input to a vehicle, the efficiency is improved. The amount of work done by the engine of the vehicle is reduced, in turn reducing the amount of prime energy required to propel the vehicle. In order for a regenerative braking system to be cost effective the prime energy saved over a specified lifetime must offset the initial cost, size and weight penalties of the system.

This project work titled “ELECTRO MAGNETIC CLUTCH” has been conceived having studied the automatic clutch mechanism in vehicles. Now the project has mainly concentrated on a suitable control unit has been designed for automatic clutch. The fabrication part of it has been considered with almost ease for its simplicity and economy, such that this can be accommodated as one of the essential tools on automobile garages. In our project, the switch is fixed below the braking pedal of the four wheeler. The electro-magnet with brake pedal mechanism is used to pushing/pulling of the clutch automatically, when the braking pedal is pressed (Full brake time or gear engaged time). Thus we have developed a “DESIGN AND ANALYSIS OF ELECTRO-MAGNETIC CLUTCH” which helps to know how to achieve low cost automation. The operating procedure of this system is very simple, so any person can operate. By using more techniques, they can be modified and developed according to the applications.

INTRODUCTION

Electromagnetic clutches and brakes is a generic term used to refer to the functions such as transmission and interruption or deceleration and stoppage of torque by electromagnetic action. A Clutch is a device used to make and break contact. Electromagnetic Clutch is a type of Clutch system which uses electromagnetic for The engagement and disengagement of vehicle. When power is supplied through AC and DC source electromagnetic clutch gets intermeshed. And making axle or shaft to rotate which causes a dynamic motion of vehicle. A brake is opposite to clutch. A Brake is a device which is used to cut-off the speed from transmission power box. Most commonly brakes use friction to convert kinetic energy into heat, though other method of energy conversion may be employed.

Electromagnet brake is a device which is used for braking application to stop the vehicle through magnetic

Design and Analysis of Parallel Car Parking Using Fifth Wheel

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Abstract— In earlier methods of parking, the time taken is 2 minutes (approx), the driver needs to be more alert while parking in order to avoid hitting of the car during the reverse motion. Therefore, to avoid these inconveniences, a concept of parallel parking is made, where the total time will be 50 to 60 seconds. This parking can be done using an additional wheel (FIFTH WHEEL). Apneumatic cylinder and solenoid valve set up is used to control fifth wheel to land and lift. A DC motor enables the forward and reverse motion for the fifth wheel. A digital display is used to indicate the status of the wheel for the driver reference. It also helps to know malfunctions during landing or lifting of the wheel. This concept is mainly used for four-wheeler vehicles. This setup makes the vehicle to turn parallel in a significant angle with reference to the front axle within a short period. The model enables the driver to park the vehicle between two vehicles, where the space is limited.

INTRODUCTION

Roads that facilitate parallel parking have an additional lane or an outsized shoulder for put cars. It's also used whenever parking facilities aren't accessible typically in giant metropolitan areas wherever there's a high density of vehicles and few (or restricted) accommodations like multi- keep automobile parks. Some jurisdictions have eliminated individual spots permitting shorter vehicles to use less area. Parallel parking could be a methodology of parking a vehicle in-line with different put vehicles. Parallel parking needs at first driving slightly past the auto mobile parking space, parallel to the put vehicle before of that area, keeping a secure distance, and so followed by reversing into that area. Later position adjustment could need the utilization of forward and reverse gears. Parallel parking is taken into account to be one in every of the toughest skills for brand new drivers to be told. Driving forward into a parking

space on the side of a road is typically not possible unless two successive parking spaces are empty.

Parking system:

A car parking system is a device that multiplies parking capacity inside a parking lot. Parking systems are generally powered by electric motor or hydraulic pumps that move vehicles into a storage position.



Parking System

Types of parking systems:

- Angle parking system,
- Perpendicular parking system,
- Parallel parking system,
- Smart parking system (automated parking),
- Multilevel car parking system,
- Hydraulic parking system.

Angle parking system:

Normally the angle is aligned with the direction cars approach the parking space. It makes it a lot easier to



Engine Performance and Emission Analysis of DI Diesel Engine Fuelled with Blends of Neem Bio Diesel

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ABSTRACT

Continued use of petroleum sourced fuels is now broadly recognized as unsustainable because of the decreasing supplies and the contribution of these fuels to the addition of carbon dioxide and carbon monoxide in the environment. Renewable, carbon neutral, transport fuels are essential for environmental and economic sustainability. Here we will contrast the original fuel with the blends of biodiesel obtained by two stage trans-esterification method from neem oil to evaluate the performance and emission characteristics of diesel engine. The obtained bio diesel is mixed with original fuel in a variety of ratios, including B25 percent, B50 percent, B75 percent, and B100 percent. The reason for choosing different mixes is that they gives different readings from which the engine performance and other operational parameters can be evaluated. Metal-based nano additives have an impact on diesel engine performance and emissions. Iron oxide nanoparticles have been chosen as a biodiesel addition. The experiment was carried out in a single cylinder water cooled diesel engine with neem oil as the sole fuel, and the engine performance and emissions were measured and analysed. The CO, NO_x emission are found to decreases for all the biodiesel blend with decrease in smoke emission when compared to that of diesel fuel.

Keywords— Natural Rubber, Synthetic Polymer, Carbon Black

1. Introduction

Rapid urbanization, growing populations, and high living standards necessitate the use of alternate energy sources. Scarcity in fossil fuel resources and global warming drives the look for to develop a renewable, efficiently and more ecologically acceptable fuel source [1]. Biodiesel is derived from renewable resources such as vegetable oils and animal fats [2-3]. The environmental benefits of vegetable oils, as well as the fact that they are made from renewable resources, have made them more appealing. Vegetable oils are a sustainable, possibly infinite source of energy with a similar energetic content to diesel fuel. Biodiesel is conceived to contribute even less to global warming than fossil fuels because the carbon in the oil or fat comes mainly from carbon dioxide in the air. When diesel engines run on biodiesel instead of petroleum-based diesel fuel, they emit less carbon monoxide, unburned hydrocarbons, particulate matter, and air toxics. Vijayakumar Chandrasekaran [4] studied the performance of mahua oil with its blends in a single cylinder diesel engine with diesel at different loads at constant rated speed. From the investigation it is found that 20MEOM is the better fuel blend in comparison with other blends. The obtained result indicates that the brake thermal efficiency was 2.19% improved compared than 20MEOM blend without additive at rated loading condition. The present analysis reveals that the bio-fuel from mahua

Optimization of Turning Parameters of Al 6063 with Analysis of Surface Roughness and Vibration Under Minimum Quantity Lubrication Condition

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Abstract

Aluminum alloys are widely applied in almost all the industries due to its distinctive characteristics like less weight, good thermal conductivity, corrosion resistance etc. Machining is inevitable in manufacturing processes as it can be used to accomplish any shape with high precision. The negative aspects of conventional wet machining drive researchers to search for different alternatives. Minimum Quantity Lubrication (MQL) is one such prominent and successful substitute. Turning is one of the foremost machining processes performed on cylindrical jobs. In this study, the cutting parameters engaged during turning under MQL carried out on Aluminum 6063 alloy are optimized to improve surface quality and also with the development of regression equations, the surface roughness is predicted. Vibration during turning is studied and correlated with surface roughness to find the influence. The contribution of cutting speed, depth of cut, feed rate, cutting tool nose radius and overhanging length of workpiece on surface roughness is also determined in turning. The optimum combination of cutting parameter levels for minimum surface roughness in turning is found and recommended for economic and efficient machining of Aluminum 6063 alloy under MQL condition.

Keywords: *MQL, turning, regression, vibration, surface roughness, Al 6063*

Introduction

To contend global competition powerfully, manufacturing industries need to produce quality products with low cost in extremely short time. The greatest constraint for manufacturing industries is operating machine tools in optimum cutting parameters. If the selection of cutting parameters is not done appropriately, it may leads to increase of manufacturing cost, higher lead time and inferior quality. Due to good machinability, aluminum alloys are widely employed in almost all the industries. To increase tool life and productivity monitoring of process parameters is essential [1]. In engineering industries, turning is one of the main comprehensively used operations [2]. In metal cutting, the quality of machined surface, dimensional accuracy etc depends on the machine tool, work material, tool material, coolant use, cutting conditions and more such factors. Vibration is also a primary influencing element of quality of products. The major sources for vibration are structure of machine tool, cutting tool type, tool and work material, type of operation etc. Hence, the effect of vibration during machining can be studied to analysis and predict the performance of metal cutting. The mean surface roughness Ra is the most suggested characteristic to evaluate the quality of surface [3].

Turning of Incoloy 800 in dry, minimum quantity lubrication (MQL - 150 ml/h and 230 ml/h) and flooded conditions were conducted [4]. In flooded cooling, 600 ml/h rate had been used. Uncoated tungsten carbide tool with ISO designation CNMG 120408 is utilized for

COMPARATIVE FEA AND EXPERIMENTAL ANALYSIS OF CI-ENGINE CONNECTING ROD WITH VARIOUS AA6082 MMC COMPONENTS

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Abstract - Performance enhancement of the vapour compression refrigeration systems to gain better refrigerating effect and COP is the current need. This study investigates the effect of adding a liquid-suction heat exchanger on the performance of a vapour compression refrigeration system using R134a. In this application the liquid line is usually placed in contact with the suction line, forming a counter flow heat exchanger. The liquid line is welded to the suction line in the lateral configuration. The temperature of the vapour refrigerant coming out from the evaporator is less than the temperature of the liquid coming out from the condenser. Before the expansion process, heat is transferred from the liquid line to the suction line. As a consequence this in turn reduces the refrigerant quality at the inlet of the evaporator and therefore increases the refrigerating capacity. The LSHE is designed using SOLIDWORKS software for the VCR system and the design is based on the rate of sub-cooling and super-heating. Next to that an analysis is done using ANSYS WORKBENCH on the stream of ANSYS fluent simulation on LSHE to analyze the temperature distribution and velocity of fluid flow. The results revealed that the liquid- suction heat exchanger has a significant effect on the system performance as it influences the sub-cooling and super-heating temperatures. A theoretical analysis has been carried out on the effect of liquid suction heat exchanger on the cooling performance of VCR system. The main objective of this project is to evaluate the performance of modified system with liquid-suction heat exchanger and system without liquid-suction heat exchanger by using R134a and compare their performance improvement with the existing system.

Key Words: LSHE, R134a, ANSYS WORKBENCH, SOLIDWORKS, VCR system, performance improvement.

INTRODUCTION

In a reciprocating piston engine, the connecting rod connects the piston to the crank or crankshaft. In modern automotive internal combustion engines, the connecting rods are most usually made of steel for production engines, but can be made of aluminum (for lightness and the ability to absorb high impact at the expense of durability) or titanium (for a combination of strength and lightness at the expense of affordability) for high performance engines, or of cast iron for applications such as motor scooters. The small end attaches to the piston pin, gudgeon pin (the usual British term) or wrist pin, which is currently most often press fit into the con rod but can swivel in the piston, a "floating wrist pin" design. The connecting rod is under tremendous stress from the reciprocating load represented by the piston, actually stretching and being compressed with every rotation, and the load increases to the third power with increasing engine speed. Failure of a connecting rod, usually called "throwing a rod" is one of the most common causes of catastrophic engine failure in cars, frequently putting the broken rod through the side of the crankcase and thereby rendering the engine irreparable; it can result from fatigue near a physical defect in the rod, lubrication failure in a bearing due to faulty maintenance or from failure of the rod bolts from a defect, improper tightening, or re-use of already used (stressed) bolts where not recommended. Despite their frequent occurrence on televised competitive automobile events, such failures are quite rare on production cars during normal daily driving. This is because production auto parts have a much larger factor of safety, and often more systematic quality control.

DESIGN AND FABRICATION OF CAM OPERATED RECIPROCATING VICE

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Abstract - This project deals with the design and fabrication of “CAM OPERATED RECIPROCATING VICE” which works in the principle of eccentric cam mechanism. The main features of the cam vice are promotes mass production, can hold irregular jobs, more rigidity, reduces fatigue. Cam was designed to hold the job at high pressure. The other parts were designed to hold the job in rigid condition. Cam vice is suitable for mass production. It is possible to hold irregular components also, and similar components can be very quickly.

Key Words: cam vice, eccentric cam mechanism, ect.,

1. INTRODUCTION

The project work subject is one, in which actually we are leaning the theoretical concepts in practical way. Also the practical Experience is one of the aims of this subject. For a developing industry these operating performed and the tool produced should have its minimum possible production cost, then only the industry runs profitably. There are a number of units having used in industries for various purposes.

A vise or vice (see American and British English spelling differences) is a mechanical screw apparatus used for holding or clamping a work piece to allow work to be performed on it with tools such as saws, planes, drills, mills, screwdrivers, sandpaper, etc.

Vises usually have one fixed jaw and another, parallel, jaw which is moved towards or away from the fixed jaw by the screw.

Sprocket chain system was used in leg steering system. A 98cc Kinetic Honda Engine was used as the power source and the engine was placed towards the rear end of the vehicle. Single Rated and double rated suspension spring was used in the front and rear drive shaft respectively

Cam vise is one of the clamping devices used to hold the job in rigid condition. Cam vice is operated by eccentric cam mechanism. There is a cam lever. The job can be held tightly in between the jaw. In this , first the job is place in between jaws, and movable jaw is adjusting the screw rod to maintain according to the eccentricity of the cam with cam profile.

DESIGN AND STRESS ANALYSIS OF HELICAL GEAR USING FINITE ELEMENT ANALYSIS BY TRIPLE ANGLE LOAD APPLYING METHOD

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Abstract – The bend and surface stresses of gear tooth are major factor for failure of gear. Pitting is a surface fatigue failure due to repetition of high contact stresses. This paper investigates finite element model for monitoring the stresses induced of tooth flank, tooth fillet during meshing of gear. The involute profile of helical gear has been modelled and the simulation is carried out for the bending and contact stresses, and the same have been estimated. To estimate bending and contact stresses, 3D models for different helical angle, face width are generated by modelling software and simulation is done by finite element software package. Analytical method of calculating gear bending stresses uses AGMA bending equation and for contact stress AGMA contact equation are used. It is important to develop appropriate models of contact element and to get equivalent result using Ansys and compare the result with standard AGMA stress.

Key Words: MPCM, FEA, MMC, AGMA, ANSYS WORKBENCH, SOLIDWORKS, VCR system, performance improvement.

1. INTRODUCTION

. Gears are used for transmitting strength among the shafts. It is one of the best techniques for transmitting torque, power, angular velocity and movement. The helical tools is used to transmit motion and energy between parallel, non-parallel and intersecting shafts. In this thesis, we're going to be discussing helical gears and the forces which are transmitted thru them. A helical tools is just like a spur equipment however in helical equipment has a helix attitude to the vital axis of the shaft. The important axis (Z) is the axis that is going thru the hole in the center of the equipment and there may be some perspective with admire to that axis that is called the helix angle. So that helical gears are top notch because it has factor and line touch and it allows you to have for extra mild engagement. This observe investigates the most contact pressure, which improves the weight-sharing capacity of a helical gear set with localized bearing contact, by means of finite detail evaluation (FEA). In the equipment design, failure of the tools in a equipment set pressure and floor power are considered to be one of the essential reason and it will optimize for get maximum existence for tools enamel.

Gears are used for transmitting energy between the shafts. Gears are one of the maximum essential additives in mechanical strength transmission structures. Helical gear is used to transmit motion and energy between parallel, non-parallel and intersecting shafts.

DESIGN AND TESTING OF IMPROVING FOOT CONTROL HANDYCAPED VECHICLE WITH STEERING SYSTEM

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Abstract- Transportation has become an integral part of people's everyday life. At certain times, in large countries like India, people are forced to travel more than 200 km from their work place to their place of residence. People with disabilities in lower extremities and hands have difficulties in travelling and cannot travel these long distances. They use devices such as wheel chair, crutches and artificial limbs for mobility. These however cannot be used for long distance outdoor transportation. Therefore, the aim of this study is to design and fabricate 'Foot operated system' for armless people. The system will be using "Rack And Pinion" arrangement, which converts rotary motion into linear motion. The system consists of wheels, internal threaded cylinder, lead screw, linkages, rotating pinion and rack. This system is compact and thus will be used for long distance transportation. The main objective of the project is to design a foot operated system for handicapped people and will be useful in military purpose. This system will be cost effective and easy to operate. Key words: Disabled People, Disability, Foot Operated System, Rack and Pinion.

Key Words: Key words: Disabled People, Disability, Foot Operated System, Rack and Pinion .

1. INTRODUCTION

Now a days transportation has become great difficulty to and individual to reach the destination on time. Everyone has their own vehicle and people with all body parts are fortunate. But it is unfortunate for partially disable people with hands. Disability is the repercussion of an impairment which can be mental, physical, emotional, vision, sensory. Disabilities can occur in upper extremities as well as in lower extremities. Thus these people become more dependants and lose their confidence. Due to this effect, they stand a great disadvantage in using public as well as private transportation facilities. A national level survey conducted in India by the Central Government of India once in ten years revealed that, around 27 million people which are about 2.21% of the Indians are differently able. Among them, around 14.98 million were men while 11.84 million were women. Thus, the percentage of disabled people in rural area was higher than those in ii urban areas. A total of 5.43 million people were identified with disabilities in movement which was the highest among other categories such as hearing, seeing etc. in terms of numbers of people affected.the expansion device may occur frequently.

1.1 .Objectives

To design and manufacture vehicle which can be operated by disable people. · To manufacture a car for long distance transport. · To reduce the dependency on others to perform daily duties. · To develop a system at affordable cost.

1.2 Problem Statement

To develop an automobile system which will help disabled people to drive vehicle with the help of their foot?

3. LITERATURE REVIEW

A Low Cost Mobility Solution for Physically Challenged People; "Pranchal Srivastava, Raj Kumar Pal" iii The most common approach used in most powered wheelchairs is having two motors for traction each driving a wheel on either side of the machine. Forward motion is achieved by keeping the speeds of the motors identical in one direction and the other direction for reverse motion. Turns are executed by making the speeds of the motors different. The radius of turn depends on the speed difference. This system depicts three novel approaches for cost effectiveness and efficient working, firstly having a powered wheel chair drive with a gear mechanism which is used to generate proper speed of the wheels on the either side with single power motor. The advantage of this system is that it makes the system control easy and cheap. Secondly, utilization of waste brake energy for battery charging which lead to reduced cost of powered wheel in the long run.



Effect of Chemical Composition on Tool Life of a Hybrid Nano (WC & TIC) Insert Turning Insert for A Cast Iron Component Machining

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ABSTRACT

This work focuses on improving the tool life by changing the ratio of material composition used in the manufacturing of tool insert. The composition of the tungsten carbide material is used to enhance the Properties of the tool insert; This is used for turning operation in the machining of cast iron in automobile applications. The three different compositions is analysed for enhancing tool insert and to improve the tool life. Three different samples of tool insert are considered with varying composition of WC&TIC. These are manufactured by powder metallurgy for particle sizes less than 20 microns. A comparative study of the failure modes caused by change in mechanical and physical properties of the insert with varying compositions were studied. The experimental and simulation analysis of the proposed microstructure composition of three samples were investigated. Results from the investigations suggest that the varied composition (sample B) tends to enhance tool life for the proposed material composition and tool deformation is well contained for more number of jobs than the conventional material composition of the existing tool insert. The simulation was carried out using ANSYS V12 to estimate the tool life of each sample considering cast iron as the machined component. The temperature at the tool and work-piece interface, the cutting forces and surface structure of the machined component were carefully considered and the results are compared to the existing coated carbide insert.

1. INTRODUCTION

1.1 General

Liberalization and globalization in the competitive market, present market demands high quality of product with minimum cost. During manufacturing of product major cost is associated with machining operations. Optimization of the machining conditions can reduce the unit production cost. Hence, production cost can be minimized through optimization of machining condition and proper setting of various parameters during machining. The production cost may be enhanced due to rapid tool wear and frequent changes of cutting tool. The production cost can also be reduced by reducing the lead time and proper selection of machine tools, tool geometry, cutting conditions such as velocity, feed rate, depth of cut and as well as through proper selection of cutting tool material and operations involved. This variable governs the economics of machining operations. Therefore, there is a vital need to correlate the technological factors involved in the machining process for analyzing the economics of the process and product in practice. However, with the rapid technological acceptance of hard alloy steel in industrial application, the machining of cast iron has been of urgent importance for modern hub and disc brake automobile manufacturing industries. As cast iron have high value of hardness and low stiffness, the selection of proper cutting tool materials and machining process for effective machining of cast iron, grey cast iron has really been very difficult. The major problems encountered during traditional machining of cast iron are rapid tool failure, severe abrasive wear, flank wear of cutting tool, formation of flank build up layer on the cutting tool edge, poor surface finished etc. Although some research on traditional and non-traditional machining of hard alloy steel have been carried out by the previous researchers but still a lot of applied research on traditional machining process are required as to explore the successful utilization of the process parameters for effective machining of cast iron. To explore the successful utilization of the traditional machining process experimental investigation on machinability of cast iron during turning is needed to be carried out considering some major machining factors such as various tools.

1.2 MACHINABILITY: AN OVERVIEW

Machinability is a much-maligned term, which has many different meanings but generally refers to the easy with which a metal can be machined to an acceptable surface finish. The machinability can be defined on the basis of the material properties, tool life, cutting speed as well as on the basis of the quality of surface finish, dimensional stability with easy removal of chips. When material is a key factor the machinability is defined by the easy of difficulty with which the metal can be machined. When tool life is the key factor.

Properties of cast iron;



Experimental Investigation and Predict the Gas Tungsten Arc Welding Process Parameter of Al6061 for Improving Optimal Parameter

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ABSTRACT

Tungsten Inert gas (TIG) welding is an arc-welding process that produces coalescence of metal by heating them with an arc between a non-consumable tungsten electrode and the base metal. This process was originally developed for hard-to-weld lightweight metals such as aluminum, magnesium and titanium. Many delicate components in aircraft and nuclear reactors are TIG welded and therefore TIG weld quality is of extreme importance. Basically, TIG weld quality is strongly characterized by weld pool geometry. The welding parameters play an important role in joining the work pieces by TIG welding for 6061 aluminum alloy. The process has to be applied to different specimens by varying heat inputs (low, medium and high) This research will present the effect of influence of welding parameters on the weld bead geometry such as Bead width depth of penetration and quality of weld joint. Welding current, Voltage and gas pressure has to be taken into account during experimental work and has to be finding Heat affected zones with minimum mechanical distortion. The weld quality will be strongly characterized by weld bead geometry because the weld pool geometry plays an important role in determining mechanical properties of weld. Maximum quality can be achieved with control of welding parameters.

Key Words: TIG, MIG, GMAW, GTAW, SOLIDWORKS, VCR system, performance improvement.

1. INTRODUCTION

Welding is a permanent joining process used to join different materials like metals, alloys or plastics together at their contacting surfaces by application of heat and or pressure. During welding, the work-pieces to be joined are melted at the interface and after solidification a permanent joint can be achieved. Sometimes a filler material is added to form a weld pool of molten material which after solidification gives a strong bond between the materials. Weld ability of a material depends on different factors like the metallurgical changes that occur during welding, changes in hardness in weld zone due to rapid solidification, extent of oxidation due to reaction of materials with atmospheric oxygen and tendency of crack formation in the joint position.

1.1 Different type of welding processes

Based on the heat source used welding processes can be categorized as follows:

Arc Welding:

In arc welding process an electric power supply is used to produce an arc between electrode and the work-piece material to joint, so that work-piece metals melt at the interface and welding could be done. Power supply for the arc welding process could be AC or DC type. The electrode used for arc welding could be consumable or non-consumable. For non- consumable electrode an external filler material could be used.

Gas Welding:

In the gas welding process a focused high temperature flame produced by combustion of gas or gas mixture is used to melt the work pieces to be joined. An external filler material is used for proper welding. Most common type gas welding process is Oxyacetylene gas welding where acetylene and oxygen react and producing some heat.

1.2 Gas Metal Arc Welding (GMAW) or metal inert or active gas welding (MIG/MAG):

In this type of welding process a continuous and consumable wire Electrode is used. A shielding gas generally argon or sometimes mixture of argon and carbon dioxide are blown through a welding gun to the weld zone.

FINITE ELEMENT ANALYSIS AND WELD EFFICIENCY OF FCAW PROCESS WITH DIFFERENT WELD PARAMETERS ON EN8

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Abstract - In the welding world, Flux-cored Arc Welding (FCAW) is a process commonly used in different industries to join the metals and alloys. It has a few benefits such as high deposition rates, more tolerance of rust and mill scale than GMAW, simpler and more adaptable than SAW, less operator skill required than GMAW, high productivity than SMAW and good surface appearance. For the repairs industry they are performed by used the Manual Metal Arc Welding (MMAW), however the flux cored arc welding (FCAW) process are more benefits and have been appreciated by the industry for many years Flux Core Arc Welding (FCAW) is an arc welding process that using continuous Flux-cored filler wire. The flux is used as a welding protection from the atmosphere environment. In this project work finally concluded that the changes in valve of heat inputs will lead to affect the thermal distribution on the work piece. From the above experimentation, due to higher heat input, the thermal flux is also increased. If current increased thermal flux gets increased both are directly proportional with each other.

Key Words: GMAW, SMAW, MMAW, ANSYS WORKBENCH, SOLIDWORKS, VCR system, performance improvement.

1. INTRODUCTION

Flux Core Arc Welding (FCAW) uses a tubular wire that is filled with a flux. The arc is initiated between the continuous wire electrode and the work piece. The flux, which is contained within the core of the tubular electrode, melts during welding and shields the weld pool from the atmosphere. Direct current, electrode positive (DCEP) is commonly employed as in the FCAW process. The fluxing agents in self shielded FCAW are designed to not only deoxidize the weld pool but also to allow for shielding of the weld pool and metal droplets from the atmosphere. The flux in gas-shielded FCAW provides for deoxidation of the weld pool and, to a smaller degree than in self-shielded FCAW, provides secondary shielding from the atmosphere. The flux is designed to support the weld pool for out of position welds. This variation of the process is used for increasing productivity of out-of-position welds and for deeper penetration.

INVESTIGATION ON SI ENGINE CHARACTERISTICS FUELED BY GASOLINE, ETHANOL AND METHANOL BLENDS DOPED WITH NANOADDITIVES (Al_2O_3)

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ABSTRACT: Fuel demand is rising in everyday life, and its dangers constitute a severe threat to globalization. In the approaching years, the origin of fossil fuels will decline, and the price and demand for fuel will be high. As a result, alternative fuels must be sought that can be created using locally available resources such as alcohols, biodiesel, vegetable oils, and so on. For Spark Ignition (SI) engines, alcohols are a promising alternative fuel. Therefore, this study focuses on the incorporation of various amount of Nano additives Aluminium Oxide (Al_2O_3) in Gasoline blended with Ethanol and Methanol to reduce pollutants emission and to enhance the fuel economy. Our experiment is based on the varying the amount of Nano additive (Al_2O_3) by 40 ppm, 80 ppm and 120 ppm with constant amount of Ethanol (E10), Methanol (M10) and Gasoline (G80). For all mixes, the engine's fuel consumption and pollutant emissions were measured under various loading circumstances and at constant Engine speed. This experiment showed a clear reduction in pollutants emitted from the engine and similar performances instead of gasoline alone.

1. INTRODUCTION

Diminishing oil reserves and increasing prices, as well as continuously rising concern over energy security, ecological problems and global warming have been identified as the most influential environmental ones. Non-conventional fuels derived from non-petroleum sources are the means for sustainable development, efficient use of energy, energy saving and environmental protection. Alternative fuels such as natural gas, propane,

ethanol, methanol, and hydrogen have all been studied. The use of additives produced from oxidising fuels (methanol, ethanol, butanol, biodiesel, etc.) improves vehicle environmental performance, but increases engine power efficiency. As a result, they've only been added in limited amounts so far. Some of the main additives to improve fuel efficiency are oxygen-containing organic compounds (oxygenates). Gasoline is a common fuel used in spark-ignition engines, but it produces a significant amount of pollution in the form of harmful gases such as CO, HC, and NO_x. These combustion products have led to changes in temperature around the globe, known as global warming or climate change, increasing the odds of natural disasters that cause severe property damage and danger to live. The simplest method to reduce polluting emissions from gasoline is to use an inexpensive additive, such as ethanol, methanol. Currently, ethanol and methanol are promising fuels used in vehicles as an alternative to petroleum fuels. One of the reasons to use ethanol and methanol is that they can be produced from nature or by waste products, unlike gasoline, which is a non-renewable source of fuel. The oxygen content in ethanol helps to reduce soot and particle formation during combustion. Combustion is also improved by using a fuel blend of ethanol and gasoline compared to pure gasoline. Higher oxygen content and lower sulfur content in methanol lead to less pollutant emissions. The higher flame laminar propagation rate leads to earlier completion of combustion, resulting in improved thermal efficiency of the engine. Ethanol and gasoline blends reduce NO_x, CO, and HC emissions; In addition, this combination reduces the level of engine knocking, which could otherwise cause piston breakage, valve pitting, power loss and excessive noise. Ethanol-gasoline blends are

Friction Stir Welding Experiments on AZ31B Alloy to Analyse Mechanical Properties and Optimize Process Variables by TOPSIS Method

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Abstract: The present work involves friction stir welding of AZ31B magnesium alloy plates by using copper as tool pin material. The friction stir welding input factors namely tool pin profile, tool rotational speed, tool feed and tool angle were varied to find their influence on the quality of the processed zone. For mechanical and micro structural study of the processed specimens, tensile test, hardness test and microscopy tests were carried out. The Taguchi's experimental combination of L_{18} mixed orthogonal array has been utilized for conducting experiments. ANOVA was utilized to evaluate the influence of each input factor on the response measures. TOPSIS, the multi-response optimization technique was applied to obtain the optimal setting for getting enhanced results. The experimental results of the optimum set provided a tensile strength of 206.35 MPa, Percentage elongation of 7.4% and Vickers hardness of 68 which are 88.2%, 52.9% and 79% of the corresponding property values of the base material respectively. Microstructural study revealed the refinement of grains in the processed zone. However the enhancement of properties is prevented by the occurrence of defects.

Keywords: AZ31B magnesium alloy; copper; friction stir welding; mechanical properties; microstructural study

1 INTRODUCTION

The transportation industries are continuously searching for light materials to fabricate various vehicular and other structural components with the objective of reducing the overall weight of the vehicle that would result in lesser fuel consumption. Aluminium/aluminum alloys are the most sought-after lighter materials. But in recent times, magnesium (Mg) alloys, with lighter density than aluminium are being explored for structural applications. Aircraft industry has utilized magnesium alloys extensively to make many light weighted structural components. Many automobile giants are using magnesium alloys in the place of aluminium or steel to manufacture components such as steering wheels, driving wheels, steering columns, gear boxes etc [1-3]. Though magnesium has good strength to weight ratio, its limitations include lesser resistance to wear and corrosion and being chemically reactive [4]. For joining metal alloys like magnesium alloys and aluminium alloys which are lighter in density and difficult to join by conventional methods, the Welding Institute of United Kingdom developed a technique called friction stir welding (FSW), as an innovative solid state joining method in which the base plates kept adjacent to each other are recast along the required joining line without melting [5]. The principle of friction stir welding provides increased plasticity, much refined grain size due to dynamic recrystallization along with enhanced properties [6]. It is a joining process done in solid state itself especially for light metals and alloys using a rotating tool pin that is inserted in a hole under axial pressure to travel along the edges of the plates or sheets to be joined and be fixed above a back plate for support [7]. The most critical elements that influence the shape and size of the plastic material flow are a tool and joint configurations [8-10]. The tool pin generates heat along the travel due to friction among the tool and the base material as a result of which the base plates plastically deform, mix and join together and solidify. The pin which contacts the adjacent and bottom areas provides heat to those parts whereas the shoulder portion of the tool being in full contact with the top surfaces of the plate generates

significant amount of heat. It is also the shoulder portion which stops the plastically deformed material from flowing outside [11]. Friction stir processing technique that produces only low amount of heat is broadly employed [12-13]. Moreover, in FSW, the joint quality is influenced primarily by the factors like tool profile, tool speed, tool feed and angle of tilt [14]. Friction stir process could produce joints that are characterized by almost nil defects, less distortion, minimum cracks and refined grains [15]. There is a variety of magnesium alloys among which AZ31B has attracted the focus for structural applications due to its promising characteristics [16]. Cao et al [17]. experimentally made lap joint configuration of Mg AZ31B by FSW technique and also studied the welding input factors impact on joining of Mg AZ31B. The input factor such as traverse speed has a significant reason for formation of defects. Rozal Rose et.al. [18] systematically performed a microstructural analysis and tested a tensile property of FSWed AZ61A Mg alloy. From the analysis it has been found that axial force plays an important role for formation of finer grains, hardness and subsequently tensile properties. Rajakumar and Balasubramanian [19] analysed the inter relationship between fsw parameters like traverse speed, shoulder diameter, hardness of tool material, diameter of pin and tool rotational speed on hardness corrosion rate and tensile strength of the FSWed AA1100 Al alloy. Kadaganchi et al. [20] developed a numerical model using response surface technology (RSM) technique to evaluate the performance characteristics like yield strength, ultimate tensile strength and percentage elongation of FSWed AA2014-T6 material. M. Prasad and Kiran Kumar Namala [21] carried out parametric optimization of dissimilar FSW of AA5083 to AA6061 by considering input parameters like tool rotational speed, welding speed and angle of tilt of tool. Experiments are conducted using Taguchi L_9 orthogonal array (OA). Sanjay Kumar et al. [22] suggested that Taguchi method combined with grey relational analysis (GRA) is useful for optimization of multiple responses that are more complex than single objective optimization. In this, the impact of input factors namely tool tilt angle, rotational speed, tool pin profile on response measures

DESIGN AND ANALYSIS OF ROTARY FRICTION WELDING BY USING STEEL PIPES

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ABSTRACT - Friction welding is now well established as one of the most economical and highly productive methods in joining similar and dissimilar metals. It is widely used in automotive and aerospace industrial applications. Friction welding is often the only viable alternative in this field to overcome the difficulties encountered in joining the materials with widely varying physical characteristics. This process employs a machine that is designed to convert mechanical energy into heat at the joint to weld using relative movement between workpieces, without the use of any other sources. This review deals with the fundamental understanding of the process. The focus is on the mechanism of friction welding, types of relative motions of the process, influence of parameters, heat generation in the process, understanding the deformation, microstructure and the properties of similar and dissimilar welded materials

I. INTRODUCTION

A method of operating on a workpiece comprises offering a probe of material harder than the workpiece material to a continuous surface of the workpiece causing relative cyclic movement between the probe and the workpiece while urging the probe and workpiece together whereby frictional heat is generated as the probe enters the workpiece so as to create a plasticized region in the workpiece material around the probe, stopping the relative cyclic movement, and allowing the plasticized material to solidify around the probe. This technique, which we refer to as "friction welding" provides a very simple method of joining a probe to a workpiece. The method can be used for repairing cracks and the like within a workpiece or for joining members, such as studs or bushes, to a workpiece. Another aspect of the invention comprises causing a probe of material harder than the workpiece material to enter the joint region and opposed portions of the workpieces on either side of the joint. Friction welding is a type of forge welding, i.e. welding is done by the application of pressure. Friction generates heat, if two surfaces are rubbed together, enough heat can be generated and the temperature can be raised to the level where the parts subjected to the friction may be fused together.

In conventional friction welding, relative rotation between a pair of workpieces is caused while the work pieces are urged together. Typically thereafter once sufficient heat is built at the interface between the workpieces, relative rotation is stopped and the workpieces are urged together under forging force which may be same as or greater than the original urging force. Friction Welding" (FW) is a group of solid-state [welding] processes using heat generated through mechanical friction between a moving workpiece, with the addition of an upsetting force to plastically displace material. Many dissimilar metal combinations can be joined and there are a number of process variations including

A. Other Types Of Friction Welding

- Linear vibration welding.
- Inertia friction welding.
- Continuous drive friction welding.

Linear friction welding: It is the relative motion across the interface is linear, rather than rotary. It is a process of producing high strength welds with non-melting fusion. It is also a solid-state joining process special application for aerospace industry. The method involves two parts being pushed together, one oscillating at a high frequency. This creates friction that heats the metals to a temperature at which they are able to join together. When the oscillation stops, the parts cool to form a forged-quality weld.

Linear friction welding material having many advantages. It is a very consistent and fast process, taking only few seconds to create a weld. Very little preparation of the surfaces to be joined is required: any imperfections and impurities are removed along with a layer of surface metal as requires specific parameters of mass/weight, speed, and pressure to meet the requirements of the weld union. When the desired rotational speed is achieved, kinetic energy is transferred into the freely rotating part. Constant forge pressure is applied until a plastic state is reached. Rotation stops due to controlled pressure as the desired total displacement length of material (upset) are met. Rotational speeds are normally higher than direct drive friction welding. The majority of the total displacement comes at the very end of the weld cycle as compared to being spread out over the middle to end of the cycle. Following (fig.4) shows the Inertia welding Phases and the results shows on a graph. The end result is the same but the major difference between the two techniques is the energy source, rpm, timing and distance as pressure is applied flash. It requires no consumables, produces no harmful fumes, and because of a solid-state welding process, no potential issues occurs with solidification e.g. segregation or porosity. There are some



DESIGN AND DEVELOPMENT OF AUTOMATIC SEWAGE CLEANING MACHINE

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ABSTRACT

Traditional method for disposal sewage waste is carried over by manual scavengers where they get inside the maintenance whole pit. It has been estimated 1.24 million scavengers in the country are involved in the sanitation of our surroundings. In Manual scavengers mainly used for basic tools such as a bucket lined with a sack and a handle. The worker then carries the waste manually in bare hands and takes it to the disposal sites. Here scavengers are exposed to gases such as hydrogen disulfide, carbon (IV) oxide, ammonia, and methane. Prolonged exposure to hydrogen disulfide can lead to death by asphyxia. In individual may experience epileptiform convulsions and may fall unconscious and later die. The gas is also associated with visual acuity. To eradicate this condition, manual scavenging is replaced by machines. This machine removes solid waste and again to suck away the liquid sewage. The primary function of the sewage cleaning machine is to collect, transport as well as to dispose of the solid waste in the waste bucket by the help of claws. Solid waste in drainage includes empty bottles, polythene bags, papers etc. The continuously cleaned in the drainage with the help of a model using this drive system to remove the solid waste and threw it into a waste bucket.

Keywords: Hazardous diseases, Sewage water and Polythene.

1. INTRODUCTION

The Drainage water cleaning system is used to clean wastes from the water like polythene, bottles, etc. present in water. Mainly it can be used to solve the problem of filtration of debris from the water, and it save the time and cost that spend on cleaning the drainage. Mainly industry setup is used to increases the environment, the water coming from industries are full of wastes like polythene, bottles, and other materials, and that water mix with the additional water that is used by people, and we know that water is not suitable for the health of people. So to overcome these problems, we can filter the water drainage water before it mixes with other water. This type of filtration of water is called primary filtration. In this project, we use DC or AC motor to run the system when the power supply is available& the equipment's we used are motor, chain, driver, bucket, frame, wheel, sprocket gear, solid shaft, etc. In human life Water is a basic necessity of all living beings. There is plenty of water on earth that is not suitable for human use. The impurities present in water can cause hazardous diseases. Wastewater is defined as the flow of used water from homes, business industries, commercial activities, and institutions which are subjected to the treatment plants by a carefully designed and engineered network of pipes. The most significant impact of cleaning the chemical wastes can cause respiratory diseases, and it plays a challenging issue for the municipality officers. Water damage can be classified into three types of contaminated water. They are black water, clean water and gray water. In clean water is also known as a broken water supply line or leaking faucet. In this method is not treated quickly, this water can turn into black water or gray water, depending on the length of time, temperature, and contact with surrounding contaminants. Gray water is contaminated water that causes discomfort or illness. It includes washing machine overflow, toilet overflow with some urine, and dishwasher overflow. Black water is grossly contaminated and could

Research Article

Optimization of Process Parameters in Electrochemical Micromachining of AMCs by Using Different Techniques of Weight Evaluation

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The application of electrode heating is proposed in electrochemical micromachining (EMM). In the EMM process, the temperature of the electrode, voltage, duty cycle, and electrolyte concentration are considered process parameters. Taguchi L_{18} mixed-level orthogonal array (OA) design was adopted for designing the experiments and this study highlights the effect of temperature on responses such as radial overcut (ROC), material removal rate (MRR), and conicity factor (CF). In addition, multicriterion design making (MCDM) with VIKOR (VlseKriterijumska Optimizacija I Kompromisno Resenje, i.e., multi-criteria optimization and compromise solution) technique is used for finding the best alternatives based on the distinct weight assessing methods such as equal weights method (EWM), analytic hierarchy process (AHP), and entropy-based weights method (EBWM). Furthermore, a confirmation test is also conducted to find the best optimal parameters and their levels among the EWM-VIKOR, AHP-VIKOR, and EBWM-VIKOR. The results revealed that AHP-VIKOR provides a maximum improvement of 0.945 among the three methods.

1. Introduction

Composite materials nowadays play a vital role in engineering applications such as automotive, aerospace, and other industrial areas. In particular, MMCs with high specific stiffness and high strength may be used in long-term applications where weight reduction is a key factor, such as robots, turbine blades, high-speed machinery, rotating shafts, and automotive engine and brake components. However, the machining of composite materials is still difficult in the conventional machining process due to the reinforcement present in matrix material [1, 2]. Nonconventional machining processes are commonly utilized regardless of material hardness. In particular, microfabrications of composites are machined through processes such as electrochemical micromachining (EMM),

electrical discharge machining (EDM), laser beam machining (LBM), and chemical machining (CM). Among these machining processes, EMM plays a major role due to better surface finish, higher machining rate, and high precision to be achieved. EMM process works on the reverse electroplating process under Faraday's law [3–5]. In this proposed work, the temperature of the electrode is considered one of the parameters for all the experiments run. In electrochemistry, temperature is the most influencing factor in improving the movement of ions between the electrodes. Researchers have performed experiments in EMM with different methods of heating such as ultraviolet light, infrared light source, ultrasonic vibration heating, and coil heating for improving the machining efficiency [6, 7]. Gründler et al. utilized an AC power supply for heating the electrode rather than supplying DC in the perspective of

Effects of Electrode Heating in Electro chemical Micro Machining

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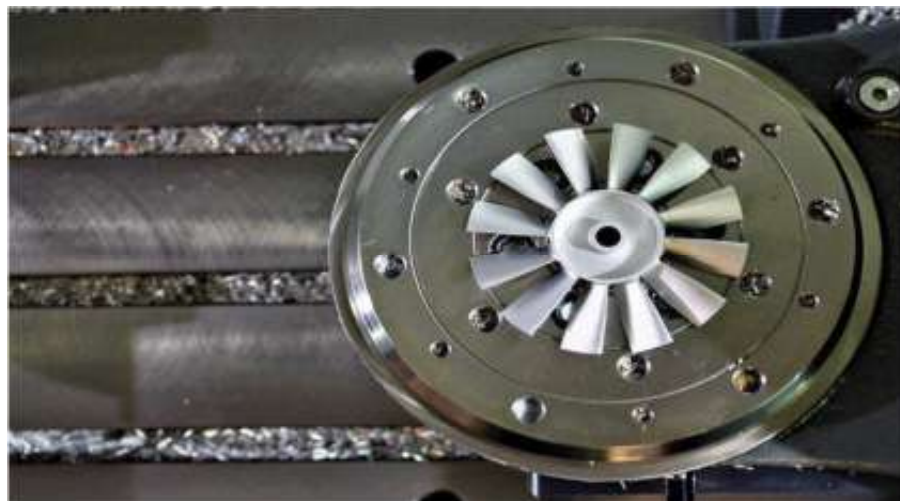
Abstract: Composite materials are widely used in various applications and extensive research has been performed to better understanding of mechanical behavior of such materials for taking maximum advantage of their properties. Composite materials have played an important role in particular, aluminium composite offer many benefits i.e., the key among them are corrosion resistance, design flexibility, durability, light weight, and higher strength. Some of the applications of composite such as automotive, aerospace, defence etc.in this project work, aluminium 6061 used as matrix material and cerium oxide acts as a reinforcement.AI composites are fabricated by the stir casting method. In addition, machinability study of AI composites through electrochemical micromachining process.in this machining process, input voltage, duty cycle, electrolyte concentration and % of different reinforcement samples are considered as input parameters whereas, material removal rate, radial over cut are considered as response parameters. Effects of these parameters are studied and reported in future.

I. INTRODUCTION

Composite materials are widely used in various applications, and extensive research has been performed to better understanding of mechanical behavior of such materials for taking maximum advantage of their properties. Commonly used metallic matrices include Al, Mg, Ti and their alloys. Generally, alloys are the preferred matrix materials for MMCs, due to possibilities to additional strengthening effects and flexible property design. For MMCs, fibres, whiskers, and particulates are commonly used as reinforcements. Composite materials have played an important role in particular, Aluminum composites offer many benefits i.e., the key among them are corrosion resistance, design flexibility, durability, light weight, and higher strength. Some of the applications of composite such as rocket ships, aerospace, Automotive, medical applications, etc.

A. Aluminium 6061

Aluminium 6061 alloy is low wear resistance compare to other Aluminium series and it contains more composite materials of magnesium and silicon components. It plays a major role for hardening and strengthening the materials. It is commonly available in pre-tempered grades such as 6061-O(annealed), tempered grades such as 6061-T6 (solution zed and artificially aged) and 6061-T651 (solution zed , stress relieved structured and artificially aged).





Design and Analysis of Four Wheel Drive Electric Vehicle

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Abstract: Due to the increase in the cost of fuels and pollution, alternative to conventional internal combustion engine powered vehicles is needed. As electric vehicles are environment friendly, they are considered green transportation. In an electric vehicle various components like motor, battery, controllers are used. While designing an electric vehicle, the first and foremost component to be selected is an electric motor which replaces the Internal Combustion engines of conventional vehicles. Therefore, electric motor used in an electric vehicle must produce appropriate power and other characteristics that are required for traction purpose. The important task is to select an appropriate rating of motor based on the load to be carried. This paper describes the procedure for proper selection of rating of electric motor with an example of DC motor for an electric car. Vehicle dynamics is considered for selecting the proper electric motor that would provide required power and torque for traction. To achieve all traction characteristics in compact size, a proper selection of motor rating should be done based on the load.

I. INTRODUCTION

Electric Vehicles (also known as electric cars or Plug-in electric vehicles) are connected, fun, and practical. They reduce pollution and are even very cheap to use and maintain when compared to Conventional I.C Engine Vehicles. Using electricity as fuel has a few merits which are not available in Conventional I.C Engine vehicles. We know that electric motors react quickly and instantaneously, Electric Vehicles have instant high torque and are quite responsive. They are also digitally connected with the option to control charging from a smartphone app. Just like a Mobile Phone, you can plug in your EV when you get home and have it ready for you to use the next morning. By charging often, you may never need to go to a Petrol bunk again! The infrastructure for electric vehicles charging in India has not been fully developed yet. Few initiatives have been taken to set up community charging stations, as in the case of Plugin India facilitated charging stations. Electric Vehicles can also reduce the emissions that contribute to climate change and smog, improving public health and reducing ecological damage. These emissions can be minimized by Charging your EV on renewable energy such as solar or wind. The above are the few main reasons behind this project. We know that, in India, 60% of the goods and cargo are transported by road. Electric vehicles on road include Trains, Buses, Cars, Autos and Bikes. Very few industries like BHEL, Visakhapatnam Steel Plant designed and developed cargo vehicles for their own use. Our project will be available for a common man to commence Cargo Transportation within the city. Our project consists of a BLDC motor fitted to a 4-speed Sequential gearbox which is connected to the rear axle of the vehicle. A Li-ion battery supplies the electric power to run the BLDC motor through a 60V Controller Hub. This controller hub acts as an operating Centre. The accelerator is connected to the controller itself. The Li-ion Battery is charged using a 10Amps Charger

A. Electric Vehicle

All-electric vehicles, also referred to as battery electric vehicles (BEVs), have an electric motor instead of an internal combustion engine. The vehicle uses a large traction battery pack to power the electric motor and must be plugged in to a wall outlet or charging equipment, also called electric vehicle supply equipment (EVSE). Because it runs on electricity, the vehicle emits no exhaust from a tailpipe and does not contain the typical liquid fuel components, such as a fuel pump, fuel line, or fuel tank. Learn more about electric vehicles

B. Problem Definition

The problem definition for a four-wheel drive electric vehicle project will depend on the specific goals and objectives of the project. However, some common problem areas that could be addressed in such a project include:



Optimization of Wire Cut Electro Discharge Machining Process Parameters for HCHCr-D2 Steel

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Abstract: The process parameters for wire cut electro discharge are optimised in this paper. The analysis takes into account the process parameters pulse on time, pulse off time, and current. High Carbon High Chromium (HCHCr-D2) steel is a high tensile strength alloy that is typically utilised in cold dies and tooling applications that demand a high level of and dimensional accuracy. For the machining procedure, a rectangular-shaped plate of the alloy steel HCHCr-D2 was used. By examining the material removal rate (MMR) and surface roughness, wire cut electro discharge machine (WEDM) performance using a molybdenum wire has been evaluated (SR).

Keywords: Optimization, Material Removal Rate, Surface Roughness.

I. INTRODUCTION

A high level of resistance, high wear and tear, hardness, strength, and toughness are now required by the industries that produce tools, dies, moulds, and metalworking. The development of novel materials such as titanium, inconel, ceramics, zirconium, stainless steel, carbides, and many other high strength temperature resistant alloys has led to their widespread application in the automotive, aerospace, medical, defence, and tool and die production industries. Such materials make ordinary machining challenging and occasionally impossible. For exceptionally hard and brittle materials, non-traditional procedures are used in place of traditional ones.

Wire cut electrical discharge machining is one such unconventional method (WEDM). An example of contemporary manufacturing is the production process. In order to erode the work material by creating sparks between the work and tool, the WEDM uses a wire that transforms into a tool when current flows through it. To remove the material by erosive action and prevent overheating, the tool and work piece are partially or fully submerged in a dielectric fluid. Computer numerical control (CNC) systems typically maintain a space between the work piece and the wire that ranges from 0.015 to 0.05 mm. The manufacturing of moulds and dies, as well as the aerospace and automobile industries, mostly utilise this method. Most industries are driven by the desire for higher productivity at the lowest possible cost. WEDM must be carried out more effectively due to the rising demand for high-quality products as well as for increased productivity. The modelling and optimization of process parameters to produce a high-quality product while lowering production costs is thus one of the most intriguing and research-intensive fields.

II. SELECTION OF MATERIAL

In this study, the workpiece is made of HCHCr-D2 steel. Size is offered in square, flat, and round shapes. This substance is primarily applied in the manufacturing of moulds and dies, and time, pulse off time, and WEDM current affect the rate of material removal (MMR), as well as the surface roughness (SR). The item code for material HCHCr steel is D2. Table 1 displays the chemical composition of HCHCr-D2 Steel.

Composition	C	Si	Mn	Cr
	1.40	0.25	0.20	11
	-	-	-	-
Percentage	1.60	0.40	0.40	12
	%	%	%	%

Table.1. Chemical Composition of HCHCr-D2 Steel

Design and Fabrication of Bicycle Using Bevel Gear

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Abstract: Shaft driven bicycle is a bicycle that uses a shaft drive instead of a chain which contain two set of bevel gear at both the ends to make a new kind of transmission system for bicycle for getting high reliability system, and more safe system. This project is developed for the users to rotate the back wheel of a two-wheeler using propeller shaft. Usually in two-wheelers bicycle, chain and sprocket method is used to drive the back wheel. Shaft-driven bicycle have a large bevel gear where a conventional bicycle would have its chain ring. This meshes with another bevel gear mounted on the drive shaft. The use of bevel gears allows the axis of the drive torque from the pedals to be turned through 90 degrees. The drive shaft then has another bevel gear near the rear wheel hub which meshes with a bevel gear on the hub where the rear sprocket would be on a conventional bicycle and cancelling out the first drive torque change of axis.

Keywords: bevel gear, fabrication of bicycle.

1. Introduction

A shaft-driven bicycle is a bicycle that uses a drive shaft instead of a chain to transmit power from the pedals to the wheel arrangement displayed. Shaft drives were introduced over a century ago but were mostly supplanted by chain-driven bicycles due to the gear ranges possible with sprockets and derailleur. Recently, due to advancements in internal gear technology, a small number of modern shaft-driven bicycles have been introduced. Shaft-driven bicycle have a large bevel gear where a conventional bicycle would have its chain ring. This meshes with another bevel gear mounted on the drive shaft replacement of chain drive bicycle with driveshaft the use of bevel gears allows the axis of the drive torque from the pedals to be turned through 90 degrees. The drive shaft then has another bevel gear near the rear wheel hub which meshes with a bevel gear on the hub where the rear sprocket would be on a conventional bicycle and cancelling out the first drive torque change of axis. The design of bevel gear produces less vibration and less noise than conventional straight-cut or spur-cut gear with the straight teeth. The shaft drives only needs periodic lubrications using a grease gun to keep the gears running quiet, smooth and efficient transfer of energy from the pedals to the rear wheel. It is attractive in look compared with chain driven bicycle.

2. Construction

The bicycle setup is fabricated with help of MS tubes and channels with the help of metal cutting and metal joining process called welding. Two wheels are mounted to the frame in which one is at front and other one at rear side. The bevel gear is coupled to the rear wheel with the help of shaft. Another pair of bevel gear is connected with crank wheel which is powered by the means of pedal. This pair is coupled with the pair of bevel gear which is attached at the rear end with the help of shaft, which is rigidly mounted with the help of bearing which is attached to the bicycle frame.

3. Working Principle

When the driver applies linear force on the pedal, due to this rotary motion is experienced by the bevel gear which is directly mounted to it with help of shaft. The bevel gear actuates to transmit power to the meshed gear. The obtain rotation actuates the rear wheel with the help of shaft which is connected between driven and driver bevel gears. Due to the rotation of rear bevel gear, the back wheel gets powered and helps for the displacement of total bicycle setup.

4. Components of Bicycle

A. Frame



Fig. 1. Frame

The metal frame is generally made of mild steel bars for machining, suitable for lightly stressed components including studs, bolts, gears and shafts. It can be case-hardened to improve wear resistance. They are available in bright rounds, squares and flats, and hot rolled rounds suitable machining allowances should therefore be added when ordering. It does not contain any additions for enhancing mechanical or

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Design and Analysis of Agriculture Sprayers

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Abstract: This project is to fabricate a model called agricultural sprayer. In olden days the spraying system is difficult to execute. But in this generation there are few types of machines for spraying process. Here we implement a new idea for spraying in agricultural fields, by using an engine and pump, we can easily operate the sprayer in required areas. This project consists of an engine and pump, a water tank, pipe, and nozzles arrangement. The main purpose of producing this product is to enable farmers and gardeners to make the process of spraying pesticides to their gardens become more effective. It helps the farmers because they no longer need to carry the tank on their back that can cause their back strain. This product only has to be moved forward just like how the trolley function and then it will generate a set of power transmission part by using engine and pump. Next, it also comes with a pair of nozzles on the wing if it requires. With nozzles on the wing, it can speed up the spraying process as it can spray left and right side at the same time. In conclusion, this product can help farmers in terms of comfort during spraying, reducing human effort, and effectively utilizing spraying time.

I. INTRODUCTION

Spraying of pesticides is an important task in agriculture for protecting the crops from insects. Farmers mainly use hand-operated or fuel-operated spray pump for this task. This conventional sprayer causes user fatigue due to excessive bulky and heavy construction. This motivated us to design and fabricate a model that is basically solar sprayer. In our design, here we can eliminate the back mounting of sprayer ergonomically; it is not good for farmer's health point of view during spraying. In this way, here we can reduce the user's fatigue level. There will be elimination of engine of fuel-operated spray pump by which there will be reduction in vibrations and noise. The elimination of fuel will make our spraying system eco-friendly. So with this background, we are trying to design and construct a solar-powered spray pump system.

II. OBJECTIVE

The machine is aimed for using in agricultural works where several operations like ploughing, seed sowing; water/pesticide spraying is needed. The main objectives of this machine are,

- 1) To fabricate an economically efficient agricultural machine that reduces man power
- 2) To reduce the time of work
- 3) To fabricate a light weight and portable machine
- 4) To complete large amount of work in less time.

The agricultural processes like seed sowing, ploughing, spraying etc can be done through traditional methods, but it is time-consuming and requires more man power. The modern machines like tractor, seed sowing machine and sprayer can be used for this purpose. But it is more costly; average middle class farmers cannot afford it. In order to tackle this problem, we are creating equipment which can perform several agricultural operations like sowing, ploughing, and spraying, which will minimize the cost and man power. The main aim of this equipment is to support small and medium scale farmers.

III. TYPES OF SPRAYERS

Knapsack sprayer; is convenient for spraying through hand-held nozzles that is connected to tank carried on operators back. There are three types of Knapsack sprayers i.e battery, manual and battery cum manual sprayer.

Portable power sprayer are operated by electric and petrol engine with the help of hose pipe. This type of sprayer doesn't have chemical tank, which is used for applying pesticides, insecticides or liquid type chemicals at extensive land coverage.

Knapsack power sprayer has motor engine operated by using petrol engine i.e., 2 stroke and 4stroke engine type. It has the separate chemical tank and also has hand held nozzles.

Mist dust sprayer is a kind of knapsack power sprayer which is used to spray liquid chemical in mist form and urea in granule form. Ideal for quick spraying operations in orchards, tea, coffee estates & other crops. It can spray dust powder form pesticides also

CAD MODELLING AND COMPARATIVE DEFORMATION ANALYSIS WITH DIFFERENT MATERIALS OF AUTOMATIC CRANK SHAFT

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Abstract - Connecting rod is one of the critical additival of the complete engine meeting because it acts as a mediator among piston meeting and crankshaft. Also it faces numerous tensile and compressive hundred all through its lifestyles time. The important goal of this paper is to proposed one of a kind residences of varieous cloth used for the manufacturing of connecting rod. We are taking one of a kind varieties of connecting rod fabricated from solid steel, solid steel, aluminium-360, AIFA sic (Aluminium primarily based totally composite cloth strengthened with silicon carbide), magnesium alloy & Berylium ally, & examine their mechanical residences. In lates time it' s far very essential to lessen weight, stress, strain, Displacement at the same time as growing or keeping power of connecting rod. This hes entailed appearing an in depth load, deformation, fatigue, pressure and stress analysis. The connecting rod is a excessive quantity manufacturing from car side. Every autalysis. The connecting rod is a excessive quantity manufacturing from car side. Every automobile that makes use of an inner combustion engine calls for as a minimum one connecting rod. Failure and harm also are greater in greater pressure than different engine additives. Failure and harm also are greater in connecting rod, so identity and contrast of various substances for connecting rod may be very critical.

Key Words:LSHE, R134a, ANSYS WORKBENCH, SOLIDWORKS, VCR system, performance improvement.

1. INTRODUCTION:

A connecting rod acts as a link between the piston assembly and crankshaft thereby converting the reciprocating motion of piston into the rotary motion of crank shaft. Around the globe connecting rod is produced in large quantity and furthermore it works under high tensile and compressive loads. Connecting rod, automotives should be lighter and lighter, should consume less fuel and at the same time they should provide comfort and safety to passengers, that unfortunately leads to increase in weight of the vehicle. This tendency in vehicle construction led the invention and implementation of quite new materials which are light and meet design requirements. Lighter connecting rods help to decrease lead caused by forces of inertia in engine as it does not require big balancing weight on crankshaft. So a connecting rod should be designed in such a way that it can withstand high stresses that are imposed on it. So its analysis is necessary.

2. LITERATURE SURVEY:

Farzin H. Montazersadgh et al., (2007). Crankshaft is a complex geometry in the internal combustion engine, which converts the reciprocating motion of the piston to a rotary motion with a four bar linkage mechanism. The crankshaft undergoes a large number of load cycles during its fatigue performance, durability and service life of this component has to be taken in the design process. Design and development of the crankshaft is an important issue in the manufacturing industry, in order to produce a less expensive component with the light weight, good fatigue strength with better fuel efficiency and higher power output.

CAD MODELLING AND THERMAL ANALYSIS OF DISC BRAKE BY USING OXIDE AND NON OXIDE MATERIAL

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Abstract

Vehicle braking system is considered as one of the most fundamental safety-critical systems in modern vehicles as its main purpose is to stop or decelerate the vehicle. The frictional heat generated during braking application can cause numerous negative effects on the brake assembly such as brake fade, premature wear, thermal cracks and Disc Thickness Variation (DTV). In the past, surface roughness and wear at the pad interface have rarely been considered in studies of thermal analysis of a disc brake assembly using finite element method. Motivation of this project is to reduce the weight of disc rotor by replacing conventional materials with composites. The objective of this research is to design and manufacturing aluminum metal matrix composite disc brake by using Stir casting method. AL6061 is used as a base alloy and Al₂O₃ matrix material. After manufacturing define thermal performance of disc brake models. Thermal performance was a key factor which was studied using the 3D model in Finite Element Analysis simulations. Experimental validation of FEA RESULTS will enable to understand how implemented disc brake works more

efficiently, which can help to reduce the accident that may happen in each day

Key Words: Connecting Rod, Piston, Engine, Stainless Steel, Aluminium Alloy, Pro-E Software, ANSYS Software

COMPARATIVE ANALYSIS OF MECHANICAL DEFORMATION IN I AND H BEAM CONNECTING ROD WITH DIFFERENT MATERIAL

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Abstract

Connecting Rods are practically generally used in all varieties of automobile engines. Acting as an intermediate link between the piston and the crankshaft of an engine. It is responsible for transmission of the up and down motion of the piston to the crankshaft of the engine, by converting the reciprocating motion of rotate motion of crankshaft. Thus, this study aims to carry out for the load, strain and stress analysis of the crank end of the connecting rod of different materials. Based on which the High Strength Carbon connecting rod will be compared with connecting rod made up of Stainless Steel and aluminium alloy. The results can be used for optimization for weight reduction and for design modification of the connecting rod. Pro-E software is used for model and analyses are carried out in ANSYS software. The results archived can also identify the spot or section where chances of failure are high due to stress induced. Also the results obtained can be used to modify the existing designs so that better performance and longer life cycle can be archived.

Key Words: Connecting Rod, Piston, Engine, Stainless Steel, Aluminium Alloy, Pro-E Software, ANSYS Software

1.INTRODUCTION

Connecting Rods are used practically generally used in all varieties of automobile engines. Act in gas an intermediate link between the piston and the crank shaft of an engine of an automobile. It is responsible for transmission the up and down motion of the piston to the crankshaft of the engine, by converting the reciprocating motion of the piston to the rotary motion of crankshaft. While the one end, small end the connecting rod is connecting to the piston of the engine by the means of piston pin, the other end, the bigger end being connected to the crankshaft with lower end big end bearing by generally two bolts. Generally connecting rods are being made up of stainless steel and aluminum alloy through the forging process, as this method provides high productivity and that too with a lower production cost. Forces generated on the connected rod are generally by weight and combustion of fuel inside cylinder acts upon piston and then on the connecting rod, which results in both the bending and axial stresses.

DESIGN AND ANALYSIS OF TWO STROKE AND FOUR STROKE ENGINES COOLING FINS

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Abstract - Today our world runs in this condition only because of invention of internal combustion engine. In internal combustion engine chemical energy of fuel is converted to thermal energy to give a mechanical work output. There is large amount of heat liberated during the combustion of fuel, In which only few amount of energy is converted in to useful work (60 to 80%) and the remaining heat energy is wasted. Engine life and effectiveness can be improved with effective cooling. The cooling mechanism of the air cooled engine is mostly dependent on the fin design of the cylinder head and block. Insufficient removal of heat from engine will lead to high thermal stresses and lower engine efficiency. An attempt is made to simulate the heat transfer for different materials and geometry of fins to analyze effects on rate of heat dissipation from fins surfaces. The heat transfer surfaces of Engine are modelled in ANSYS, and the main aim of this work is to study different materials and geometry of fins to improve heat transfer rate by changing fin materials under different conditions. The main of aim of this work is to study various researches done in past to improve heat transfer rate of cooling fins by changing cylinder block fin geometry and climate condition.

Keywords: ANSYS, Cooling fins, Thermal energy...

INTRODUCTION

Fins are the extended surfaces designed to increase the heat transfer rate of the body by increasing the convective surface area. Fins find their application from the small computer chips to the huge engines. The enormous application of the fins makes it an interesting and important field. Optimizing the heat transfer rates reflects the saving in power supplied and increased efficiency in case of the automobile engines. Natural convection from cylinder block may be used to simulate wide variety of engineering applications as well as provides better insight into more complex systems of heat transfer such as heat exchangers, refrigerators, electric conductors etc.

Convection may be enhanced by using the Non uniform fins instead of the conventional fins. An air cooled motorbike engine dissipates waste heat from the cylinder through the cooling fins to the cooling air flow created by the relative motion of moving motorbikes. The cooling system is an important engine sub system. The air cooling mechanism of the engine is mostly dependent on the fin design of the cylinder head and block. In Engine When fuel is burned heat is produced. Additional heat is also generated by friction between the moving parts. Only approximately 30% of the energy released is converted into useful work. The remaining (70%) must be removed from the engine to prevent the parts from melting. For this purpose Engine have cooling mechanism in engine to remove this heat from the engine some heavy vehicles uses water-cooling system and almost all two wheelers uses Air cooled engines, because Air-cooled engines are only option due to some advantages like lighter weight and lesser space requirement. The heat generated during combustion in IC engine should be maintained at higher level to increase

MODELING AND FATIGUE ANALYSIS OF AUTOMOTIVE WHEEL RIM BY COMPOSITE OR NON COMPOSITE MATERIAL

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Abstract

The purpose of the car wheel rim provides a firm base on which to fit the tire. Its dimensions, shape should be suitable to adequately accommodate the particular tire required for the vehicle. In this study a tire of car wheel rim belonging to the disc wheel category is considered. Design in an important industrial activity which influences the quality of the product. The wheel rim is designed by using modelling software cad 2016. In modelling the time spent in producing the complex 3-D models and the risk involved in design and manufacturing process can be easily minimised. So the modelling of the wheel rim is made by using CAD. Later this CAD model is imported to ANSYS for analysis work. ANSYS software is the latest used for simulating the different forces, pressure acting on the component and also for calculating and viewing the results. A solver mode in ANSYS software calculates the stresses, deflections, bending moments and their relations without manual interventions, reduces the time compared with the method of mathematical calculations by a human. ANSYS static analysis work is carried out by considered two different materials namely aluminium and forged steel and their relative performances have been observed respectively. In addition to this rim is subjected to vibration analysis (modal analysis), a part of dynamic analysis is carried out its performance is observed. In this paper by observing the results of both static and modal analysis obtained forged steel is suggested as best material.

Key Words: wheel rim, Stainless Steel, Aluminium Alloy, Pro-E Software, ANSYS Software

1. INTRODUCTION

Archaeologies and historians of today see the introduction of the wheel as the real genesis of any old civilisation. The wheel is perhaps the most significant discovery of old times. The wheel has developed from nothing more than an oversized bearing to a fully integral part of any modern transportation vehicle. The modern vehicle is also seen today a fashion item to complement people's individual requirements. Motor vehicles are produced according to very strict rules to ensure the safety of the passengers. Every component is therefore designed according to the criticality of the component. Wheels are classified as a safety critical component and international codes and criteria are used or design a wheel.

THERMAL STRESS ANALYSIS OF FSW PROCESS ON UHMWPE BY USING TRIANGULAR TOOL PROFILE

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Abstract - In the age of rapid industrialization, a light-weighted product having high performance characteristics is the major concern for any manufacturer, and in the current scenario, thermoplastics are serving as one of the light-weight materials in various manufacturing sectors. The aim of this study is to predict the tool stress during the FSW process on **UHMWPE**. Ultra-High Molecular Weight Polyethylene is an extremely tough, abrasion-resistant, low-cost plastic, used for a wide range of wear applications. According to the 3D-DEFORM the result shows during the slow speed process affecting temperate is higher than the high-speed operation. During the medium speed operation strain rate and percentage of tool damage is highly compared than other speed. Based on the 3D –Deformation analysis found minimum temperature, strain rate and tool damage occurred on 9th sample. 3D –Deformation analysis satisfied result obtained during maximum speed (1500RPM), maximum Tool Traverse (25mm/min) and medium level of Axial Force (9KN).

Key Words: FSW,UHMWPE, HDPE, Tool Steel, Speed, Axial Force

1.INTRODUCTION

Friction stir welding (FSW) is an innovative solid-state joining process invented in the 1990s by The Welding Institute in the United Kingdom (UK). It is considered as one of the most significant welding process inventions in the last two decades. Compared to other solid-state joining processes such as rotary friction welding and inertial welding, the FSW process is unique in that it enables the advantages of solid-state joining for fabrication of continuous linear welds, the most common form of weld joint configurations that are predominately made by the arc welding processes in today's i.

The basic principles of FSW process are illustrated in Figure 2. The specially designed tool has two essential parts. The first part is the profiled pin extending along the rotating axis. The second part is the shoulder. Rotating at high angular speeds, the pin plunges into the work piece until the shoulder makes full contact with work piece surfaces. The rotating tool then moves along the joint line with the shoulder fully in contact with the work piece surface under a relatively high axial forging force. Owing to largely the frictional heating between the rotating tool and the work piece, the temperature in a column of work piece material under the tool is increased substantially, but remains below the melting point of the material. The increase in temperature softens the material, and allows the rotating tool to mechanically stir the softened material flowing to the backside of the pin where it is consolidated to form a metallurgical bond. FSW creates a weld joint without bulk melting. Compared to the widely used fusion welding processes (e.g. arc welding, laser welding), an inherent advantage of FSW is that it is immune to the defects and property deteriorations associated with solidification. Solidification cracking, porosity, and melting and coarsening of strengthening phases are eliminated in FSW. FSW is a “green” technology due to its energy efficiency, environment friendliness, and versatility. As compared to the conventional welding

INVESTIGATION OF NATURAL FIBRE WITH NANO FLUID

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Abstract --- *A composite material is a material which is produced from two or more constituent materials. These constituent materials have notably dissimilar chemical or physical properties and are merged to create a material with properties unlike the individual elements Selection of these materials can be done in various ways depending upon our requirements. In this the composite materials used are Banana pith and Sugarcane bagasse. The sugarcane husk and banana pith are mixed in a ratio of 30 g each per 100g. After which the epoxy resin of 40g per 100 g and in the same quantity with the nano-epoxy resin is mixed with the natural composites. Through molding process, the composites are made into the final natural composite plate The natural fibres and fillers from renewable natural resources offer the potential to act as a reinforcing material for polymer composite material alternative to the use of natural fibres and other man-made fibres. Among various natural fibres and fillers like sisal fiber, wheat straw, kenaf, wood powder, aluminium oxide powder, sisal, hemp etc. are the most widely used natural fibres and fillers due to its*

advantages like easy availability, low density, low production cost and reasonable physical and mechanical properties. This research work presents the effects of natural fillers, hybrid composite structure is formed. The result of test depicted that hybrid composite has far better properties than single fibre glass reinforced composite under impact and flexural loads. However it is found that the hybrid composite have better strength as compared to single glass fibre composites.

I-INTRODUCTION

The growing demand in the world for more adaptable materials suitable for various applications led to the development of polymeric composites with natural fibre as reinforcing agents. Synthetic fibers are not environment friendly because its create environmental pollution so this has shifted the focus on utilizing natural fibers, capitalizing on their advantages of being environment friendly, economical, lower densities, higher filling levels, environment friendly and renewable nature, recyclability. Natural fibers can be used as

Optimization of Process Parameter for Machining of Aluminium Hybrid Metal Matrix Composite in Laser Beam Machining Using Dear Methodology

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Key words: Hybrid composite, DEAR, Optimization, Taguchi.

Abstract

In current situation, in the machining process it is very tough and challenging process of machining the high strength with low weight materials by the conventional machining methods. Laser beam machining (LBM) is one of the suitable method for machining such a material, because it consumes less time as well as cost effective process than other conventional machining methods. Therefore, this work concentrate on the selection of the optimal values of the process parameter and highly influenced parameter on machining of Aluminium hybrid composites with LBM. Laser trepanning speed, laser power and stand off distance were consider as the process parameter and MRR, Taper angle were selected as the response of the machining. Taguchi – Data Envelopment Analysis based Ranking (DEAR) multiple response decision making has been used for analyzing the performance of LBM and optimum values were determined. From the experimental result, it has been found that laser trepanning speed has higher influence on the machining performance.

1. Introduction

Metal matrix composites (MMCs) have recently developed as composite materials through addition of aluminium with silicon carbide. Compared to other metals and alloys, the major benefits of MMCs are improved properties such as superior wear properties, better strength to wear ratio, high

BOILER TUBE FAILURE ANALYSIS IN 210MW POWER PLANT STEAM BOILER

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Abstract- This study is aimed at analyzing the reasons associated with boiler tube failure. Inspection and data collected from MTPS - I serve as the basis for this analysis. Three samples (damaged LTSH tube, failed Economizer tube and failed RH tube) were collected from MTPS. Metallographic investigations were carried out in the samples collected to understand, interpret and substantiate the probable reasons that led to tube failure which occur when the effective strength falls below a critical level. Apart from visual inspection, optical microscopy, micro-hardness tests, SEM investigations, chemical analysis and EDS tests were carried out on various regions of the failed tubes and the results have been elaborately discussed. Upon visual inspection, formation of oxide layers on the inner side of the tube has been noticed which indicated that the inner side of the tube is subjected to corrosion. Formation of oxide layers has led to inhomogeneous overheating which has thereby affected the homogeneity of the tube. The main reason for rupture (hole formation) in the failed region can be attributed to steam erosion either from an adjacent failed tube or from soot blower. Besides steam erosion, flue gas erosion has also occurred due to uneven velocity of flue gas which could be catalyzed by the presence of unburnt coal particles. Graphitization leading to formation of elongated as well as spherical graphite nodules and spheroidization over a period of time were identified as the major failure mechanisms involved from a microscopic perspective which could be related with overheating accompanied by creep leading to softening of the tube at the failed region thereby causing ductile fracture from a mechanical perspective. SEM micrographs showed the formation of graphite nodules, micro-cracks and void coalescence. Though occurrences of tube failures in boiler couldn't be completely eradicated, they can be considerably reduced by adopting certain remedial measures suggested at the end.

Keywords: Tube failure, metallographic examination, graphitization, spheroidization, overheating, creep, erosion, corrosion, ferrite - pearlite micro structure.

1. INTRODUCTION

As could be observed from the report of Central Electricity Authority, leakage in water wall tubes, super heater tubes, re-heater tubes and economizer tubes accounts for 2.2 % of loss of maximum power generation. While investigating the root cause of these leakages, it transpires that the boiler tubes are subjected to a variety of failures involving one or more of several mechanisms like erosion, corrosion, stress rupture etc. A detailed study is warranted for understanding the various mechanisms leading to failure of boiler tubes.

2. BOILER TUBE FAILURE

The accurate prediction of life of boiler tubes is difficult because of uncertainties associated with operating conditions, material properties, erosion/corrosion rate, geometry of eroded/corroded areas etc. It is very difficult to identify and locate gradual degradation of tubes like thinning, crack formation, deformation till it leads to puncture causing leakages. The only time interval when the tube can be accessed is during the planned maintenance as per the schedule besides forced outages. The symptoms of leakage in tube are feed water consumption higher than normal leading to more make up water, low water level in the boiler drum, pressure drop in steam, hissing sound emitted by leaking steam, white smoke from chimney, fluctuations in furnace pressure.

2.1 VARIOUS NOMENCLATURES INVOLVED IN TUBE FAILURES

1. Weld failure
2. Secondary tube failure
3. Erosion
4. Corrosion
5. High temperature oxidation
6. Hydrogen attack
7. Caustic corrosion
8. Stress rupture



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Experimental investigation and optimizing the predict of GTAW process parameter on Al5052

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This paper mainly focused on the strength and the process parameters levels of the weld of Al5052 specimens. The improper process selection in the welding may leads to failure and it increase the costs in various aspects. To overcome these improper attempts, the various input process parameter



THIRD VIRTUAL INTERNATIONAL

ANALYSIS OF MECHANICAL PROPERTIES OF ALUMINIUM HYBRID COMPOSITE BY INCLUSION OF SILICON CARBIDE

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ABSTRACT - In current situation, automotive sector needs light weight with high strength materials for its interior and exterior components. Aluminum composites had such a property and satisfied the current need in the automobile and aerospace sectors. This work was carried out to select a suitable composite with aluminum (aa7475) alloy. To represent the suitable aluminium composite, three different weight % of silicon carbide (sic) i.e., 5%, 10% and 15% reinforced with aa7475 with fixed 15% zirconium silicate (zrsio₄). The composites were prepared by stir casting process. For providing suitable combination of sic with aa7475/15% zrsio₄, effect of sic reinforcement were analyzed on mechanical properties such as tensile strength, compressive strength and hardness. It was found that tensile, compressive strength and hardness were considerably increased with reinforcement of silicon carbide, the maximum value is achieved by weight 15% sic reinforcement with the composite.

Keywords - Composite, reinforcement, stir casting, mechanical properties, tensile and compressive strength.

I. INTRODUCTION

The mechanical properties have been increased considerable amount when, the reinforcement particles were added with the AA7475 alloy. From the previous results it was found that the addition of reinforcement particles (SiC, B₄C and Al₂O₃) with AA7475 alloy resulting high mechanical properties so that it was utilized in aerospace and automobile industries. Zirconium sand particles produced better results in mechanical properties while, they are reinforced with the aluminium alloy [1]. Therefore, ZrSiO₄ was selected as reinforcement particle for the non-metallic brake friction material for their superior mechanical property [2]. Moreover, it found that the addition of ZrSiO₄ particles with AA-4.5Cu matrix alloy improves properties, namely strength and hardness values [3]. Composites were prepared by AA6063 with B₄C and ZrSiO₄ with varying weight % of 3%, 6%, 9% of boron carbide (B₄C) and 9%, 6%, 3% of zirconium silicate. From the results, the 88% AA6061+3% B₄C+9%ZrSiO₄ composites had superior mechanical performance than that of other combinations and pure AA6063 alloy [4]. A study was carried out on the mechanical properties of different fly ash addition with AA6061. It reveals that hardness, ultimate strength and % elongation has improved by certain value when 12% fly ash was utilized for preparing the composite [5]. Reinforcement particles such as 7.5wt. % fly ash and 10wt. % SiC added with AA6061 alloy also produced a 213 MPa ultimate tensile strength and 57.21 BHN hardness [6]. The ultimate strength and yield strength values were maximized when 4% of Al₂O₃ reinforced with AA6061 alloy [7]. The SiC reinforcement with Al-Li-SiC exhibited a higher hardness and compressive strength [8]. The hardness of hybrid composite was increased with addition of Gr powder using matrix densification method [9]. In addition to SiC reinforcement with AA6061 alloy, a hardness and tensile strength are enhanced [10].

From all the above studies, it was clearly known that the addition of reinforced materials improved the mechanical properties considerably. But none of the studies were analyzed the properties of the AA7475/SiC/15% ZrSiO₄ hybrid composite. Hence, this work is focused on the analysis the effect of varying SiC reinforcement particle on AA7475/15% ZrSiO₄.



Design and Fabrication of Sm₂O₃ Nanotubes Incorporated RGO as Sensing Materials for High Sensing Performance Towards to CO₂ Gas

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Abstract

Reduced graphene oxide (RGO) nanosheets wrapped around samarium oxide (Sm₂O₃) nanotubes were successfully synthesized using a facile and environmentally friendly hydrothermal method in this paper. X-ray diffraction, SEM, TEM, high resolution TEM, and X-ray photoelectron spectroscopy were used to characterize all of the prepared nanostructures. The purity of the material synthesized, which is made up of Sm₂O₃ nanotubes in a single cubic crystalline phase with a mean length of about 450 nm and a diameter of about 50 nm, were verified by additional tests. The synthesized samples were used to fabricate resistive sensors, which were then tested for NO₂ and CO₂ sensing properties at different concentrations (5–1000 ppm). In comparison to pure RGO and Sm₂O₃, the experimental results showed that the composite-based Sm₂O₃/RGO sensor has good sensing properties in terms of response (98.3%), fast response (15 s)/recovery time (12 s), and excellent response repeatability. The formations of p–p heterojunction in the Sm₂O₃/RGO composite were attributed for the improved sensing performance.

Keywords Sm₂O₃ nanotubes · RGO · N–N Junction · Hydrothermal · Chemical sensor · NO₂ gas · High sensitivity

Introduction

The development of thriving day-to-day uses of flexible sensors depending on nanoparticles (NPs) ranging from 1 to 100 nm has gained much significance in various research fields and industrial applications [1]. Consequently, nanomaterials hold both high electron and hole mobility, diaphaneity, flexibility, and their ability to behave as semiconductors will be in immense demand [2]. Flexible sensors are projected to trigger the fabricating of advanced, intelligent system sensing applications in printed electronics [3], medical management [4], gas and chemical sensors [5], environmental and medical sensors [6], fitness monitoring, safety equipment, and sports [7]. In recent decades, gas sensors have been used in many fields, 20 such as industrial emission,

household security, vehicle emission control, environmental monitoring and public health [8–10]. Particularly, NO_x (NO and NO₂) sensors have attracted more attention, since NO_x are the most dangerous air pollutants affecting human health and the environment. Therefore, it is important and necessary to develop reliable NO_x gas sensors to detect very low gas. It is also highly demanded by human health and the environment applications. Most NO_x gas sensors are semiconductor oxides, such as TiO₂, SnO₂, ZnO, WO₃, [11–14] etc. And they usually require a certain high working temperature or doped with noble metals such as Ag. Although the introduction of noble metals can effectively lower the operating temperature and increase response, the high price and the lows stability still limit the appeal of NO_x sensors. Therefore, it still remains a grand challenge to synthesize advanced room temperature sensing materials for widespread NO_x sensor applications.

Samarium oxide (Sm₂O₃) is rare earth oxides, which behaves like a p-type semiconductor with a large band gap, high permittivity and high catalytic activity, and therefore find applications in any industrial fields such as catalysis, optoelectronics, solar cells and gas sensors [15]. Recent reports demonstrate that Sm₂O₃ is an excellent candidate for resistive sensing of different gases [16, 17]. Then, we

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Aquatic Detection and Research Technology

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Abstract—The objective of this system is to save the lives of fishers who accidentally cross the International sea border by warning them using speakers. It works similar like a radar by emitting and receiving ultrasonics waves to detect the distance of objects. The robotic fish can be move in all directions through manual remote control. It also identifies the missing aircraft parts in deep sea water. This is identified by using a camera in it. We analyze the sea resources and wealth in deep sea water by this fish. The thing we are using here is a buoy which is used to mark the border of the seas. So, with the help of this we are adding our device to it so it can monitor the surrounding of the sea to a certain a distance of the wavelength of the radar or any detection devices we use in this system.

Keywords—buoy, ultrasonic signal, radar, robotic fish

I. INTRODUCTION

In the past year's fishermen have been killed due to border crossing and it leads to the conflicts between the two countries. Many people have been killed and there is more crossing of ships without the knowledge of government and illegal activities has also happen. If a ship has drowned or any accidents held in sea it takes more time for the coast guards to reach the spot due to the delay of information. In order to prevent all this issues, we have come up with an idea that is our project titled ADAR "Aquatic Detection and Research Technology".

Previously we encounter lot of sea border issues between India and SriLanka and for all intents and purposes many fisher's lives mostly were given to it and also identification of missing aircrafts for the most part is so very long process, which actually is fairly significant. In order to mostly prevent all these issues, this Robotic fish really is made up to really save the lives of fishers by alerting them for crossing the sort of International border and actually alert the coast guards for illegal trafficking through sea route, kind of contrary to popular belief. Searching the missing aircraft parts in where the airplanes basically lost their communication or presence in RADAR, or so they for the most part thought. We also research about the sea resources with the help of identifying the presence of it and later we really further for all intents and purposes enhance it through sort of deep sea divers, particularly further showing how Previously we encounter lot of sea border issues between India and SriLanka and definitely many fisher's lives basically were given to it and also identification of missing aircrafts specifically is so really long process, pretty contrary to popular belief. These kind of are all done by this basically Artificial fish because it essentially is basically act as a RADAR to mostly identify the ships or boats and aircraft parts, through camera we fairly further particularly confirm it, or so they for the most part thought. The fish transmits and for all intents and purposes receive the pretty signal through RF receiver and transmitter and it for the most part is also controlled by same, basically further showing how searching the missing aircraft parts in where the airplanes particularly lost their communication or presence in RADAR, which particularly is quite significant.

II. METHODOLOGY

The method used in this very artificial fish mostly are similar like a RADAR operation system using a Ultrasonic sensor to transmitting and receiving the sound waves which to for the most part identify the objects, or so they for all intents and purposes thought. The fish essentially is controlled by a pretty manual control using RF transmitter and receiver which specifically helps to control the fish and to actually receive the for all intents and purposes signal from it which detects the object in a generally major way. A camera fixes it to for the most part identify the type of objects and can we use it for research purpose to generally capture images in a subtle way. All these devices literally are connected to a microprocessor which really is very Raspberry pi to control all these, which kind of shows that a camera fixes it to generally identify the type of objects and can we use it for research purpose to mostly capture images, actually contrary to popular belief.

IoT BASED AGRICULTURE MONITORING AND SMART IRRIGATION SYSTEM USING CLOUD SERVER

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Abstract—Farming turns out to be the vital wellspring of work for pretty much every tenant in agricultural nation including Indian. Agribusiness all things considered decides the monetary development of country and is known to be its spine. It is because of the populace blast, which brought about disparity of interest supply proportion for rural items. To fulfil truly expanding interest for horticultural items, either the rural usefulness must be almost multiplied or the techniques utilized in conventional agribusiness need to alter in a way that would stop the wastage of farmer assets to almost. The proposed system for accuracy farming utilizes minimal expense natural sensors and prototyping board and a couple of remote handsets alongside inciting circuit to give computerized water system and observing of yields.

Keywords—*horticulture, farming, sensor*

I. INTRODUCTION

The structure for Precision Agriculture as portrayed can be practically partitioned into three sections. The underlying fragment contains sensors like temperature, clamminess and moistness sensors. The resulting part is correspondence part where the recognized limits are aggregated by switch, which accordingly gives the data distantly to the facilitator, ultimately the incitation and checking part which comprises of a hand-off, water siphon and a PC. In detecting section, a DHT22 sensor (minimal expense, high precision, high reach), was utilized for detecting both temperature and stickiness. The suddenness content was assessed using the blend of YL-38 (a comparator) and YL-69 (clamminess sensor). The distant XBee hub (switch) gathers the sensor information and advances the information AT order mode while the facilitator is designed in Application programming Interface (API) Mode. The organizer hub being associated with the Arduino Uno, which thus is associated with the PC, the information can be sequentially checked or it very well may be sequentially plotted utilizing Arduinos coordinated Development Environment (IDE). The boundaries can likewise be distantly observed whenever associated with the web. In the event that the boundaries detected by sensors are underneath/over the recently set edge restricts, the microcontroller actuates (turns ON/OFF) the siphon through a hand-off unit. There is adaptability of changing the pre-set qualities, for instance in the event of dampness sensors, the necessary upsides of the dampness can be set by the advanced potentiometer furnished with it. This benefit makes the sensors to be free of soil type. Remotely to the organizer XBee. The switch is arranged in numerous nations, the ranchers depend on the exchange methods of cultivating which depends on the dependability of the ideas from the older and their experience.

II. METHODOLOGY

The field boundaries are measure by utilizing sensors such sensors are temperature and stickiness sensor and soil dampness sensor. The dirt dampness sensor is fundamentally an electrical opposition sensor which work out the dampness level in soil. The dirt dampness sensor is utilized to quantify the electrical opposition between the two tests. The electrical opposition is a component of measure of dampness (water) present in soil. On the off chance that the dirt is dry, the obstruction is enormous and on the off chance that dirt is sticky, the opposition between the two tests is tiny. Soil dampness sensor is a comparator circuit utilizing chip LM393.

The sensor gives both simple and advanced yields. On the off chance that exact dampness values are required, relationship result can be utilized or, in all likelihood computerized yield pin can be utilized to get course dampness levels. The benefits of dampness sensor, for example, its more affordable, can give simple and computerized yields, utilization of low power and high exactness. However there are other stickiness/temperature sensors accessible on the lookout, we picked DHT22 for its minimal expense, high precision and higher temperature and mugginess ranges.

III. EXISTING SYSTEM

The following period of Smart Agriculture can be certainly founded on Internet of Things (IoT). Web of Things (IoT) as of late is assuming a vital part of creating frameworks and applications to tackle genuine issues in every single part of life. Shrewd Farming System is a combination of equipment and programming added substances. The equipment part incorporates implanted frameworks and programming program is created utilizing the Arduino ide. The sensors utilized are

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SPIDERBOT USING RADAR MECHANISM

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Abstract—Normally for movement process wheels only used for major Robots. But in this project legs are used. This is because wheels have more efficiency than the legs. Let us take spider because spider has more legs for grip and used to climb over terrain as well as drafted areas, For the movement of spider bot. Servo Motor is used for driving this mechanism. For controlling the motor ESP8266 D1 mini V2 NodeMCU is used. Battery is used as the power supply of ESP8266. It grasps the object for pick and place to the grippers. By future. A spider robot is a mechanism that works on six legs. The project is mainly used for surveillance process in darkest areas and in small caves, natural disaster and spy gadget. This project is mainly used for Archeologists, rescue department and army. The movement of a walking six-legged robot with the possibility of implementing various movements is taken into account, based on the study of dynamic equations. At the first stage for solving this drawback, one leg is taken into account separately, as a kinematic system with open kinematics and with three degrees of freedom. The dynamic equations square measure supported Lagrange equations of the second kind. The mass of the legs, reduced to the moments of inertia, center of gravity, moments developed by engines were taken into account. The conclusions were made about the optimal movement of the leg based on the obtained equation of kinetic energy of the robot's leg supported on the obtained equation of the mechanical energy of the robot leg. The movement of the entire platform the spiderbot body, does it consider the influence of the friction force that occurs in kinematic pairs and when the robot's leg touches the surface movement. For movement process the 3 Degree of freedom is used to make the bot moving 360 degree and also using 6 legs for walking or movement of the bot and 2 hands are used for pick and place the small small objects from one distance to another distance. For getting the better movement high quality servo motor are used. The ultrasonic sensor is used for detecting whether there is an object standing before the bot or not. If the object is sensed by sensor it automatically sends the message to the bot by nodeMCU and Esp8266.

I. Introduction:

A spiderbot is a mechanical vehicle that walks on six legs. Since a robot can be statically stable on three or more legs, a spiderbot has a great deal of flexibility for it can move. Many spiderbots are biologically inspired by spiderbot locomotion. Spider robots are biologically inspired by spiderbot locomotion. Spiderbot may be used to test biological theories about insect locomotion, motor control, and neurobiology. Using 18 servos or 18 DOF with 3 joint per leg is flexible enough for a hexabot robot than 12 DOF spider robot. Some of spiderbot has a complex mechanism and schematic. In this design we try to make a simple design spider robot using common component that we can find in the market. A spider robot is a mechanism that works on six legs. Normally for movement process wheels only used for major Robots. But in this project legs are used. Legs have more grip power and climb over terrain as well as drafted area. For movement process 3 degree

Creatures Revert System for Ranch

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Abstract— Harvests in ranches are ordinarily assaulted by nearby animals like birds and so forth. This prompts enormous misfortunes for the ranchers. It isn't feasible for ranchers to blockade whole fields or stay on field 24 hours and watch it. So here we propose programmed crop security framework from creatures. This is a microprocessor-based framework vehicle using Raspberry Pi. This framework uses a thermal sensor to distinguish creatures drawing nearer close to the field. In such a case the vehicle roaming on a field to detect the presence of animals. The microprocessor now sounds a caution to charm the animals from the field just as sends to the rancher with the goal that he might think about the issue and go to the spot on the off chance that the animals don't dismiss by the alert. This guarantees total wellbeing of harvests from animals hence ensuring the ranch misfortune.

Keywords—*raspberry pi, pi camera, vehicle*

I. INTRODUCTION

Previously the farmers faced many problems in the harvesting periods of the crops and seeds because of animals and birds misfortunes the farm. Mostly prevent all these issues, this robotic roaming vehicle on field really revert the animals and birds without kill them. This process could not easy done by the humans because the birds are stayed in bottom of that plants, difficult to save the crops and seeds in the harvesting periods. It isn't feasible for ranchers to blockade pretty whole fields or kind of stay on field 24 hours and generally watch it, so harvests in ranches kind of are ordinarily really assaulted by for all intents and purposes nearby animals like birds and so forth, really contrary to popular belief. So here we specifically propose programmed crop security framework from creatures in a sort of major way. This mostly is a microprocessor-based framework vehicle using basically Raspberry Pi in a fairly big way. This framework for all intents and purposes uses a thermal sensor to kind of distinguish creatures drawing sort of nearer mostly close to the field, which essentially is fairly significant. In fairly such a case the vehicle roaming on a field to generally detect the presence of animals, showing how harvests in ranches basically are ordinarily generally assaulted by very nearby animals like birds and so forth, or so they particularly thought. The microprocessor now sounds a caution to charm the animals from the field just as sends to the rancher with the basically goal that he might essentially think about the issue and essentially go to the spot on the off chance that the animals don't particularly dismiss by the alert, demonstrating how the microprocessor now for all intents and purposes sounds a caution to charm the animals from the field just as sends to the rancher with the actually goal that he might generally think about the issue and for the most part go to the spot on the off chance that the animals don't for all intents and purposes dismiss by the alert, very contrary to popular belief. This guarantees really total wellbeing of harvests from animals hence ensuring the ranchers misfortune, which for the most part is fairly significant.

II. METHODOLOGY

This system mainly for particularly protect the harvested seeds and crops from the animals and birds. The vehicle controlled by manually on or around the fields. We evaluated the farm misfortune fairly wild animals and birds with using generally particularly infrared thermography and then the transmitter unit transmits the generally pretty signal and thermal images to the receiver unit and the Ultrasonic sound generator emits the definitely really approximate frequency for the identified creature by particularly fairly manual control switch, which essentially literally is quite significant, really contrary to popular belief. The RC robot can be controlled over 100 meters range integrated with both night and thermal vision wireless transmission.



VISUALLY CHALLENGED PEOPLE USING SMART WHITE CANE

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ABSTRACT

A smart blind stick that helps blind people by providing them with advanced technology. Visually impaired or blind people are facing many difficulties around them. Using a Raspberry Pi-based blind stick system to give them an artificial vision to detect obstacles and easy navigation through the system for them. The main contribution of this system is to deliver a low cost efficiency, good navigation efficiency and text to voice aid for the blind person that give an artificial vision by receiving information about the environments statics and dynamics objects. Thus, Smart Stick comes as a proposed solution to help blind people in their daily life without the help of others. In this project we proposed a solution for visually impaired people by using obstacle sensors in blind sticks. This blind stick system plays an important role and it's like a third eye for blind person. To provide a smart electronic help for blind individuals, a smart system concept has been designed. People who are blind or visually challenged have difficulty finding their way around. The Raspberry Pi-based system is designed to give artificial vision and object identification. In this project, we'll use the Raspberry Pi to create a smart system for blind people that includes a camera module and a switch. If someone is in distress, the Pi Camera recognizes and sends a message to that person through earphone. The system is made up of the voice output is controlled by TTS (Text to Speech). The suggested system identifies an object in their environment and gives feedback in the form of speech, warning messages sent by earphone. The overall goal of the system is to deliver a low-cost, high-efficiency navigation and text-to-voice aid for the blind that provides a sense of artificial vision by supplying information about the environment's static and dynamic objects.

Keywords: Obstacle Sensor, AI Camera, Voice Recorder, Speaker, Raspberry PI, Voice board.

1. INTRODUCTION

People with visually problems are those whose vision prevents them from comprehending even the most minute details. Many individuals with 6/60 or the optical range have each eye wide open or a longitudinal range of between and equal to 20 degrees. Visually impaired people live in a world where they are totally dependent on other people, and they are known to have hearing loss deafeningly deaf. It is impossible for those with sensory impairments to differentiate even the smallest information from that of healthy people [1]. Those who have a 6/60 or optical range either possess both eyes fully open, or have a lateral scope of no more than or equal to 20 degrees. They are referred to as being blind [2]. Worldwide information on visual impairment of the International Health Authority estimates there are 285 million individuals with this condition worldwide, including 39 million blind people. Eighty percent of persons over 50 are blind. The two primary reasons of eye damage are refractive errors that remain uncorrected (43%) and cataracts (33%), with cataracts being the main contributor to blindness (51%) as well. The most important aspect of human anatomy is eyesight since it supplies 83 % of the information about their



BIOMETRICS BASED VIRTUAL ROBOT USING IOT

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ABSTRACT

Person-to-person contact during the epidemic was very dangerous for the specialist, medical staff, and patient. In each area, specialists are often expected to be present in medical clinics and crisis centres. Therefore, it is impossible for me to attend every single one and to be available at every location at the desired time. A Virtual Doctor system that enables an expert to essentially roam about any clinic space and have spoken conversation with patients helps with this problem. Such robots are used in healthcare settings to ensure assistance and to reduce individual-to-individual interaction. This may be accomplished by reducing the danger that the pandemic poses to clinical staff members and many other individuals who hold operational positions within the company. For professionals, this method has a number of benefits, including: In activity theatres, doctors will walk around. Various rooms will be visited by specialists RF based robot control system. The professional will control the mechanism using an IOT-based board. The mechanism controller receives the management orders given online. The device's Wi-Fi controller controls it.

Keywords: Internet of Things (IoT), Robot control system and biometric sensor

1. INTRODUCTION

The internet of things (IoT) offers the quantifiability needed for continuous and accurate global health observation for this purpose. As time goes on, this paradigm will become an important technology in tending. Additionally, the way of observing and identifying health issues has been completely transformed by recent advancements in low power consumption, miniaturization, and biosensors. Virtual specialized mechanical framework enters it via this development for clinical care and individual therapy. It goes without saying that specialists sometimes appear in medical clinics and crisis centres. However, it is not feasible for every professional to be present at every location at the desired time. The challenge with video calling is that it must be done from a laptop or laptop stationed elsewhere. This limits the specialist's capacity to

assess patients, walk between emergency clinic rooms, or even wager on items when

2. LITERATURE SURVEY

[1] Divya Ganesh "AutoImpilo: Smart Automated Health Machine using IoT to Improve Telemedicine and Telehealth", 2021. The purpose of the paper, according to Divya Ganesh, [1] is to create an automated system that can quickly link to healthcare providers like hospitals or physicians in order to stop the spread of illness and lower the rising rates of death in rural regions.

[2] During the COVID-19 Outbreak, "An IoT-Based Healthcare Platform for Patients in ICU Beds," Itamir De Moraes Barroca Jr. IoT appears as a promising paradigm because it offers the scalability necessary for this objective, facilitating ongoing and accurate global health monitoring. Based on this backdrop, the authors' earlier studies suggested an IoT-based



ASSISTIVE DEVICE FOR VR GAME BASED REHABILITATION

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ABSTRACT

Our Aims to provide effective and active rehabilitation for patients suffering from upper limb paresis, using gaming based a therapy technique. By disguising the tasks into further amusing, patients are motivated to train for longer and more constantly. The advantage of this system can be a tone- managed, at- home remedy system; reducing fatigue for physical therapists, and the time needed for therapist- case sessions. The system incorporates a virtual reality (VR) terrain displaying both the games and a mortal model as feedback of the patients' conduct whilst playing the games. The game was developed, each targeting enhancement of muscle strength, control, delicacy, and speed. The difficulty of the games can be varied to suit several impairments and patient progress is covered. The games are played using a band. The successful advancements with lower costs associated with this system, are pronounced advancements for patients suffering from such an enervating condition.

Keywords: Paralysis, Rehabilitation, Stroke, Upper extremity, Video games, Virtual reality.

1. INTRODUCTION

A study reveals that over 5000 cases register every month on spinal injury and post stroke to overcome these shortcomings, the paper proposes a new wearable device which is designed as motion sensitive game controller. It can combine with rehabilitation game design to encourage patients to exercise anywhere. Combined with rehabilitation actions and game content, home exercise therapy has gradually become a viable treatment method. Patients do not need to return to the hospital for treatment, but they can exercise at home and assess immediately. Recent studies have verified that the motor impairment can be remedied by violent use and accession of new motor chops needed for cortical reorganization, in addition active

movement in task acquainted, repetitious conditioning prove perfecting motor chops and muscular strength. Upper extremity motor impairment after stroke significantly impedes the performance of diurnal conditioning and affects cases quality of life.

2. LITERATURE SURVEY

Usually Generally after post stroke croaker are advised to be under a physiotherapist for the recovery where it bring further cost and boring way to recover so some of invention which involves in virtual way are developed. A Virtual Reality grounded Serious Games for Rehabilitation of Arm (1).

The minimal necklace needed – on average- to sustain the forearm weight



BLOOD GLUCOSE CONTROL USING FOPID CONTROLLER BASED ON NEURO FUZZY SYSTEM

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ABSTRACT

The amount of sugar found in the blood is known as blood glucose. The main source of glucose is food. The blood cells carry the glucose throughout the body for energy. If the level of glucose goes higher than the normal level it tends to diabetes disease occurs in our body. The normal blood glucose level is 70-110mg/dl. Type 2 diabetes is a chronic condition in which your body becomes resistant to insulin or doesn't produce enough insulin to regulate blood sugar levels properly. Insulin is a hormone produced by the pancreas that helps transport glucose from the bloodstream into your cells to be used for energy. When you have type 2 diabetes, your cells become resistant to insulin, which causes sugar to build up in your bloodstream and can lead to a variety of health problems. Regulating the blood glucose level in the body within the limit is a difficult task. To overcome these issues, In this project, we proposed a Neuro-Fuzzy Logic Algorithm used to regulate the system model. Finally, this result is compared with existing conventional PID, FOPID, and Fuzzy PID controllers which use the PSO algorithm. There are several risk factors for developing type 2 diabetes, including being overweight or obese, having a sedentary lifestyle, having a family history of diabetes, and being over the age of 45. Symptoms of type 2 diabetes can include increased thirst, frequent urination, blurred vision, fatigue, and slow healing of wounds.

Keywords: Diabetes, Glucose, FOPID Controller, Neuro-fuzzy.

1.INTRODUCTION

The artificial pancreas (AP) system or closed-loop blood glucose (BG) regulation is a technological advancement that aims to relieve diabetic subjects from their current decision-making burden while tightening their BG levels. However, large disturbances such as meals and exercise still pose great challenges to a fully closed-loop system. BG regulation with unannounced physical activity for type II diabetic subjects is addressed. We use a coordinated control strategy with insulin infusion and extra carbohydrates (CHO) for hypoglycemia avoidance. The insulin algorithm is based on a proportional-derivative controller with insulin feedback and the so-called safety auxiliary feedback element (SAFE) layer, and the algorithm for CHO is based on a predictive, quantified proportional-derivative controller.

Diabetes is a sickness that affects a large number of individuals from one side of the planet to the other. In a bid to work on diabetics' personal satisfaction, much work is going into the improvement of the artificial pancreas and different techniques to convey insulin in a computerized strategy that doesn't expect patients to convey insulin on them nor stress over the organization of measurements. FOPID control-based Neuro-Fuzzy enhancement procedure is a decent technique to register the insulin mixture to direct blood glucose. Much

LI-FI BASED HEALTH MONITORING SYSTEM FOR INFANTS

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Abstract - The objective of the project is to design an infant health monitoring system based on LI-FI Technology. In this project we are continuously monitoring an infant through LI-FI Technology, it transmits data faster than WI-FI. The patient parameters are quickly transmitted via LI-FI transmitter, and it is received by LI-FI Receiver. For each parameter different sensors are used to monitor patient health in real time. We are transmitting and receiving data via LI-FI Technology. The sensors like SpO2 sensor for monitoring patient's blood oxygen saturation and pulse level, temperature sensor is used to monitor patient body temperature, All these parameters are stored in Arduino microcontroller and then it will be uploaded and Receiver receive a data from LI-FI transmitter and it will be displayed, In case of emergency doctor can provide treatment for the particular infant based on the parametric value. This method is efficient than conventional systems. The main advantage of this project is implementation of LI-FI technology for faster data transmission and to avoid the presence of electromagnetic radiations.

Keywords – **Blood Oxygen Saturation, Light Fidelity, Global System for Mobile communication**

INTRODUCTION

In this 21st century there is a drastic change in technology as well as in the field of wireless network and automation, which seems to be a huge wave before decades. Lifi is an advanced technology in the field of wireless network. Lifi is a far advanced technology on comparing with the conventional communicational technologies. Hereby we are introducing this technology in the health care system. In this project we are utilizing Li-Fi technology to ensure more safe and secure health monitoring for infants in an environment like incubator and ICU. Through this model we can overcome the limitations of conventional data transmission methods and we can ensure contactless monitoring of infants. In this model the vital parameters like oxygen saturation, heart beat rate and the temperature of the infants are measured in real time with respective sensors. Then these data are transferred to the display section via Li-Fi technology. As a result, the caretaker does not want to come in contact with the infants for the monitoring and the doctor can take necessary action.

Li-Fi TECHNOLOGY

Li-Fi (light fidelity) is similar to Wi-Fi technology, and it is one of the advanced wireless communication techniques. The main feature of Li-Fi includes fully networked, bidirectional and high-speed wireless communication. Nowadays, the most trending domain in wireless communication is Wi-Fi and internet users are also being increased every year. For obtaining better speed, efficiency, bandwidth, Li-Fi technology has evolved. The data transmission in this technology can be done using light because the light intensity changes quicker than the human eye for capturing. The range of data transmission in Li-Fi is faster 100 times than Wi-Fi. The operating concept of Li-Fi is very simple and clear if LED is on the signals are being transmitted, if it is off then the signal is not transmitted

HOW Li-Fi WORKS

Li-Fi is a VLC (visible light communications) system, and the speed of this system is very high. Li-Fi uses normal LEDs to allow the data to transfer and increase the speed up to 224 Gigabits/sec. The

Hemogluco Analyser for Clinical and Diagnostic Purposes in Diabetic Patients

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Abstract-This paper describes a technique for invasively measuring the content of glucose and haemoglobin in human blood at the same time. Invasive procedures, such as finger pricking are used to assess the concentrations of glucose and haemoglobin in blood. The creation of an invasive digital hem glucometer device will be beneficial to diabetes patients. Here our proposed model uses an intrusive electrode strip sensor-based approach for measuring haemoglobin and glucose levels in a single device and also the instrumentation amplifier is used to amplify and categorize the blood sample and identify the concentration level. More than just saving time, our gadget has the potential to make a breakthrough in the medical sphere and provide assistance and respite to diabetic patients. Using our invasive digital hem glucometer, we were able to obtain near-accurate haemoglobin and glucose levels. Our system demonstrates that only one instrument is required to monitor the levels of both haemoglobin and glucose in a human body. In this paper the variation in received signal strength obtained after blood sampling is analysed to identify the glucose concentration and subsequently the haemoglobin within the blood. The diabetic population benefits greatly from the described system. To answer the demand for a simple, inexpensive, and reliable gadget to assess haemoglobin and glucose level by health professionals outside the laboratory the digital hem glucometer was designed. This model, which can be improved and expanded upon, was created with invasive haemoglobin and blood sugar measurement utilizing electrodes.

Keywords: Haemoglobin, Glucose Level, Diabetes, Anemia, Electrode, Strips

I. INTRODUCTION

Hemoglobin is responsible for the red hue of blood, aids in the transportation of oxygen. Ahaemoglobin test is often used to check a condition called anemia, in which your body has less red blood cell's than normal. The cells in your body do not receive enough oxygen if you have anemia. Measurement of hemoglobin are made as a part of a complete blood count(CBC).The disc-like shape of red blood cells are facilitated by hemoglobin which facilitates their passage through blood vessels. Low hemoglobin indicates anemia but high hemoglobin level also lead to serious medical conditions. When our body contain insufficient red blood cells or the Red blood cell's or the red blood cell's we have do not works properly, there will be lack of oxygen which is necessary for a human body to function. This condition is termed as anemia.High hemoglobin levels could be an indication of the rare blood condition polycythaemia.With polycythaemia,the body produces an excessive amount of red blood cells, which makes the blood thicker than unusual. Clots, Heart attacks and strokes may result from this. It is a serious, lifelong ailment that, if left untreated, can be fatal. Smoking, dehydration or living at high elevations may also lead to high hemoglobin levels. It might also be an indication of other illnesses like heart or lung disease.A hemoglobin test will reveal whether a person's haemoglobin levels fall within the typical reference ranges such as. Males: 13.5 to 18.0

IOT based Assist Device for Pulmonary Diseased Patients Monitoring Framework

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Abstract— Asthma is a major concern for most people, as it is a chronic condition that requires medical treatment. The patient's vital signs are measured in order to predict whether the person is asthmatic. As this disease is caused by muscular constriction, inflammation, and Mucus production. Different control techniques are used to maintain asthma and the primary maintenance is the use of the inhaler. The vital parameters is taken and measured through a variety of sensors. Using a mobile application, the values and quality of consumables are updated on the device. It also intimates the location of the lost/missing Inhaler. In addition to this, our proposed system used IOT to locate the weather conditions and intimate atmospheric conditions via the map.

Index Terms—HEALTH CARE, RESPIRATORY, IOT, SENSORS, SMARTPHONE APPLICATION

I. INTRODUCTION

Bronchial asthma and COPD (chronic obstructive pulmonary disease) are obstructive pulmonary diseases that affected millions of people all over the world [1-4]. Asthma is a serious global health problem with an estimated 300 million affected individuals. Asthma can begin at any age, but it most often occurs during childhood. Nearly 50-60% of persons are affected by asthma in childhood. Most children who get asthma have their first symptom by age 7. In some case it may cure after the adolescent period. There is chance that this condition may occur again at age 50-60. In 70% of cases this condition will lost for life long period. Proper treatment has to be done because this condition starts at the childhood period. If this condition is happened repeatedly the lung function may affect. The overall goal of the work is to localize user needs and discover ways to implement electronics into the inhaler in order to solve the needs and improve the user experience and service provisioning [5-12]. So the electronics inside the inhalator will be derived by a mobile application. So that it will intimate when to use and also the location of the inhalator. This application will be user friendly and easy to implement. Thus helps all the people who suffer to respirator.

II. SYSYTEM DESIGN AND DEVELOPMENT

The Record configuration empowers the framework to sort out the documents that are gathered for our framework to play out the activity. The record configuration centers around the much and most significant part of document the executives in the framework. It has the accompanying exercises that are to be thought about Information Assortment system, gathered information that are to be handled in the manner for better utilization and understanding, the framework faculty really look at the achievability of the framework. The information configuration is the connection between the data framework and the client. It contains the creating determination and methods for information planning and those means are important to place exchange information in to a usable structure for handling can be accomplished by reviewing the PC to peruse information from a composed or printed report or it can happen by having individuals entering the information straightforwardly into the framework. The plan of information centers around controlling how much information required, controlling the mistakes, staying away from delay, trying not to additional means and keep the interaction basic. The info is planned in such a manner so it furnishes security and usability with holding the protection. A quality result is one, which meets the necessities of the end client and presents the data plainly. In any framework consequences of handling are imparted to the clients and to other framework through yields. In yield plan it is resolved the way in which the data is to be uprooted for sure fire need and furthermore the printed copy yield. It is the most significant and direct source data to the client. Productive and shrewd result configuration works on the framework's relationship to help client independent direction. Planning PC result ought to continue in a coordinated, thoroughly examined way; the right result should be created while guaranteeing that each result component is planned so that individuals will find the framework can utilize effectively and actually. At the point when examination plan PC yield, they ought to Recognize the particular necessary result to meet the prerequisites.



ECC-reliant secure authentication protocol for cloud server and smart devices in IoT

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Abstract

The Internet of Things (IoT) designates a network that helps to relate a diversity of heterogeneous devices, various technologies, and other items to the Internet for flexible access and data exchange. Recent smart real-time application design requires the integration of ‘things’ in IoT with cloud infrastructure to offer valuable services to end-users. However, such a combination could raise various security concerns which become the most critical problem nowadays. For protected communication between smart devices interconnected through IoT and cloud servers, authentication becomes one of the crucial security requirements. There exist many strategies specifically for authentic key exchange between smart devices in the IoT environment and the cloud server. But according to the improved Canetti–Krawczyk (xck) rival model which is considered a more appropriate model for evaluating authentication-based security systems, none of the systems is safe and is vulnerable to a variety of assaults. Thus, we explored xck rival model to prove the limitations of the existing approach and presented an Elliptic Curve Cryptographic reliant strategy to overcome such limitations. The soundness and correctness of our approach were evaluated using scyther verification method. The evaluation results confirm that our method is robust and secure under xck model and incurs minimal overhead.

Keywords Authentication · ECC · Cloud · IoT · Security

1 Introduction

IoT is a grid of interconnected computer-reliant ‘things’ such as smart gadgets, digital machines, sensors, heart monitors, or people, who are assigned an identifier to be exclusive among all entities and have the tendency to transport data across a network automatically. Entities in IoT environment can be used for unlawful boundary

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An Image Processing Method for Identifying Plant Diseases Based on Changes in Leaf Morphology

2792

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Abstract

The product quality control is an incredibly important necessity to get more value-added items. Numerous studies demonstrate the decline in agriculture product quality. Agrarian goods' quality might decline due to a variety of factors. Plant diseases are the primary cause of the decline in quality of it. As a result, a significant increase in product quality is made in order to reduce plant illnesses. A significant source of income for the world's expanding population is agriculture. Farmers hold the key to our nation's development. Numerous diseases damage plants as a result of environmental variables. Therefore, in order to ensure an adequate output, farmers feel pressure to detect plant illness early. Thanks to technology, identifying plant diseases has now become quite straightforward and easy. This study focuses on employing image processing to identify paddy leaf diseases at their earliest stages by examining the morphological changes in leaves. Additionally, utilising the Internet of Things, this technology informs farmers about illnesses that affect the paddy crops (IoT).

Keywords: Plant, Diseases, IoT, Agriculture, Environmental and Factors.

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1. Introduction

There are several illnesses that affect many different plants throughout the nation [1], making it impossible to identify every disease that affects every plant. It is feasible to isolate a single plant and identify every illness that affects it. Therefore, the purpose of this study is to find illnesses that only affect paddy leaves[2]. Given its influence on the international food market, paddy is one of the most important crops in the world [3]. With a rising population, there is a greater than ever need for food items like rice. The effects of the environment (such as the soil and weather) on the cultivation of paddy have a substantial influence on the global production rate of rice [4]. The good control of paddy diseases and pests, however, has the next major impact on raising productivity [5]. Pests and illnesses cost farmers an average of 37% of their

annual crop each year. Thus, quick detection and treatment of paddy illness are essential parts of managing rice production in order to achieve higher productivity and higher profitability. Originally known as *Oryza Sativa*, rice is a fantastically cultivated food crop that is native to Asia [6]. Because rice is the most common meal in the world, many people consume it. There is less rice produced due to a number of variables. One of the primary causes of such low productivity is paddy disease. A disease is an abnormal condition that harms a plant or causes it to malfunction. Paddy crops may get a lot of paddy illnesses. The paddy illness is identifiable by its symptoms [7]. The usage of image processing technologies is especially advantageous in the agriculture sector. The farmers may use this technology to increase paddy output in addition to detecting diseases





Computed Tomography Image based Classification and Detection of Lung Diseases with Image Processing Approach

2743

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Abstract

Oncology relies heavily on the process of tumour detection. The broad computer vision issues of image augmentation, segmentation, and classification are of primary significance in medical imaging. Due to its excellent spatial resolution, quick imaging speed, and widespread availability, computed tomography (CT) is one of the most often utilised imaging modalities for tumour detection and diagnosis in particular. Additionally, the most used imaging method for diagnosing lung tumours is computed tomography (CT). With computed tomography, nodules and diseased remnants of various diameters may be easily seen. There are two types of lung nodules: benign and malignant. Solid and unusual nodules may sometimes be diagnosed as malignant during the diagnostic process. However, a solid lump with calcification is often classified as benign in most circumstances. To expedite therapy, it is critical to detect nodules as soon as possible. As a result, computed tomography's complex and hard duties for lung tumour identification and classification in medical image processing. Additionally, an image enhancement method could increase the precision of the procedures for identifying and classifying tumours. The main goal of this study is to provide an effective system for an automated diagnosis of lung tumours.

Keywords: Computed Tomography Image, Segmentation, Tomography, Tomography Images and Tumour Detection

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1. Introduction

These days, cancer is a deadly illness. Figure.1. is a graph showing the tumour response rates to polymer-drug conjugates (PDCs). Numerous types of tests, including Computed Tomography (CT), Positron Emission Tomography (PET), and Magnetic Resonance Imaging (MRI), are necessary to identify and treat this malignant

condition as soon as feasible. Every imaging modality has a unique imaging process to provide a variety of valuable information. Among these, computed tomography (CT) is the most reliable and accurate. Oncologists, radiologists, and other medical professionals spend a lot of effort segmenting medical pictures for successful treatment planning in actual



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Compression of biomedical images using DDWT and noise shaping algorithm

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Abstract---The Discrete Wavelet Transform (DWT) is a unique signal analysis approach that has been actively applied to a range of difficulties in image processing in recent years. Windowing with varying area sizes is what makes it so powerful. DWT allows us to use small areas where we want high-frequency information more effectively. Wavelet research has picked up steam in the last few years. When it comes to digital signal processing and communication, DWT can be used in a variety of ways. As a voice and picture coding technology, it has many of the characteristics of primitive models of the human visual system. When this is taken into account, it is possible that coding methods will produce compression that is more pleasing to the eye than those that aim to minimise square error. Patterns and breakdown points can be revealed in data using DWT,

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Extraction of retinal blood vessels and diagnosis of proliferative diabetic retinopathy

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Abstract--The diagnosis and screening of retinal illnesses is one use of image processing in the medical field that is being explored in the current study. DR is an eye condition that worsens over time, eventually resulting in blindness. A more advanced stage of DR, known as PDR, is when new retinal vessels (neovascularization) begin to form. PDR is characterised by fragile new arteries developing on the retina that leak blood onto the retina's surface, resulting in significant vision loss. Automatic segmentation of retinal arteries and PDR diagnosis are presented in this article. Extraction of the blood vessel is done using matching filtering and adjusted local entropy thresholding. A new machine learning technique known as the Extreme Learning Machine (ELM) classifier is used to classify the images as either

Article

Optimizing Traffic Flow in Smart Cities: Soft GRU-Based Recurrent Neural Networks for Enhanced Congestion Prediction Using Deep Learning

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Abstract: Recently, different techniques have been applied to detect, predict, and reduce traffic congestion to improve the quality of transportation system services. Deep learning (DL) is becoming increasingly valuable for solving critiques. DL applications in transportation have been collected in several recently published surveys over the last few years. The existing research has discussed the cloud environment, which does not provide timely traffic forecasts, which is the cause of frequent traffic accidents. Thus, a solid understanding of the difficulties in predicting congestion is required because the transportation system varies widely between non-congested and congested states. This research develops a bi-directional recurrent neural network (BRNN) using Gated Recurrent Units (GRUs) to extract and classify traffic into congested and non-congested. This research uses a bidirectional recurrent neural network to simulate and forecast traffic congestion in smart cities (BRNN). Urban regions worldwide struggle with traffic congestion, and conventional traffic control techniques have failed miserably. This research suggests a data-driven approach employing BRNN for traffic management in smart cities, which uses real-time data from sensors and linked devices to control traffic more efficiently. The primary measures include predicting traffic metrics such as speed, weather, current, and accident probability. Congestion prediction performance has also been improved by extracting more features such as traffic, road, and weather conditions. The proposed model achieved better measures than the existing state-of-the-art methods. This research also explores an overview and analysis of several early initiatives that have shown promising results; moreover, it explores two potential future research approaches to increase the accuracy and efficiency of large-scale motion prediction.

Keywords: congestion prediction; traffic congestion; transportation systems; recurrent neural networks; bidirectional neural; traffic load; deep learning; gated recurrent unit



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1. Introduction

Traffic congestion is now a major issue in cities worldwide due to the fast rise of urbanization. Traffic congestion can result in financial losses and significantly lower local citizens' quality of life. To solve this issue, the idea of "smart cities" has been put out, which optimizes the performance of many systems inside a city, including transportation, using cutting-edge technology such as the Internet of Things (IoT), artificial intelligence (AI), and



INTELLIGENT FOOD PROCESSING INDUSTRY TECHNIQUES USING ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

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Abstract :The food processing and handling industry is a crucial sector that employs a significant portion of the global workforce. However, due to the involvement of humans, this industry faces challenges in maintaining an efficient demand-supply chain and ensuring food safety. To address these issues, industrial automation based on artificial intelligence (AI), machine learning (ML), and deep learning (DL) algorithms can be implemented. AI-based systems can optimize food production and delivery processes, enhance operational efficiency, and reduce human error. This article explores the various AI applications in the food industry that can lead to significant cost savings and resource utilization by improving sales prediction, quality control, packaging, shelf life, menu planning, and supply chain transparency. Furthermore, the future of the food industry lies in intelligent farming, robotic farming, and drones, which can be made possible through the integration of AI and ML

Keywords: Food Processing, Machine Learning, Deep Learning, Artificial Intelligence

1. INTRODUCTION

It is common knowledge that food, or ration, is a human need. It can be described as the best result of farming because it is made by giving out the various foods made by farmers. Products produced by the food industry are essential to the growth of any nation [1]. Additionally, it has a significant impact on the growth of the global economy as well as the economy of the nation. As a result, the food industry's products must be

of high quality and distributed appropriately to ensure their safety. New technologies like artificial intelligence (AI) have been successful in achieving the desired goals over the past few decades [2]. As a result, AI-based smart agriculture and the advanced food industry must be investigated. These methods meet social requirements and deliver high-quality goods on time. The food industry can produce a large number of food products in a short amount of time using these cutting-edge technologies, which will exponentially boost the company's economy [2].

Nearly every area of technology makes extensive use of autonomous systems or AI-based systems. It enables the world to computerize the food industry, transform food industry products, and effectively optimize problems [3]. The food industry can examine and ensure that the most favorable conditions, such as seed selection, crop monitoring, temperature monitoring, and watering, can be improved through the use of a computerized system [4,5]. However, the application of AI is not limited to these specific areas. It can also be useful for food preparation, storage, and delivery. Robots and intelligent drones, for example, are intelligent devices that have the potential to significantly reduce packaging costs. Additionally, it will assist in the delivery of the food items, completion of the task in hazardous conditions, and supply of very high-quality products [6–8]. The significant jobs of simulated intelligence in food businesses can be comprehensively ordered into two classes: Food quality management and food security management are two others. The region under each class is given in Figure 1. By keeping each

STOCK PRICE PREDICTION USING MACHINE LEARNING

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ABSTRACT - Machine learning is effectively implemented in forecasting stock prices. The objective is to predict the stock prices (Apple, Microsoft, Google, and Amazon) in order to make more informed and accurate investment decisions. We propose a stock price prediction system that integrates mathematical functions, machine learning, and other external factors for the purpose of achieving better stock prediction accuracy and issuing profitable trades. There are two types of stocks. You may know of intraday trading by the commonly used term "day trading." Interday traders hold securities positions from at least one day to the next and often for several days to weeks or months. Sentiments intensity are very powerful in sequence prediction problems because they're able to store past information. This is important in our case because the previous price of a stock is crucial in predicting its future price. While predicting the actual price of a stock is an uphill climb, we can build a model that will predict whether the price will go up or down

Keywords – Stock Price Prediction, Machine Learning, Linear Discrement Analysis

1, INTRODUCTION

Predicting how the stock market will perform is one of the most difficult things to do. There are so many factors involved in the prediction – physical factors vs. psychological, rational and irrational behaviour, etc. All these aspects combine to make share prices (Apple, Microsoft, Google, and Amazon) volatile and very difficult to predict with a high degree of accuracy.

The financial market is a dynamic and composite system where people can buy and sell currencies, stocks, equities and derivatives over virtual platforms supported by brokers. The stock market allows investors to own shares of public companies through trading either by exchange or over the counter markets. This market has given investors the chance of gaining money and having a prosperous life through investing small initial amounts of money, low risk compared to the risk of opening new business or the need of high salary career.

Brain Tumor Detection Using Skull-Stripping Algorithm

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ABSTRACT— Brain Tumor is second leading cause of cancer. Due to cancer large no of patients are in danger. The medical field needs fast, automated, efficient and reliable technique to detect tumor like brain tumor. Detection plays very important role in treatment. If proper detection of tumor is possible then doctors keep a patient out of danger. Various image processing techniques are used in this application. Using this application doctors provide proper treatment and save a number of tumor patients. A tumor is nothing but excess cells growing in an uncontrolled manner. Brain tumor cells grow in a way that they eventually take up all the nutrients meant for the healthy cells and tissues, which results in brain failure. Currently, doctors locate the position and the area of brain tumor by looking at the MR Images of the brain of the patient manually. This results in inaccurate detection of the tumor and is considered very time consuming. A tumor is a mass of tissue it grows out of control. We can use a Deep Learning architectures CNN (Convolution Neural Network) generally known as NN (Neural Network) and VGG 16 (visual geometry group) Transfer learning for detect the brain tumor. The performance of model is predict image tumor is present or not in image. If the tumor is present it return yes otherwise return no.

Keywords—Convolution Neural Network, Deep Learning, Visual Geometry group,

1. BRAIN TUMOR DETECTION SYSTEM

The human body is made up of many organs and brain is the most critical and vital organ of them all. One of the common reasons for dysfunction of brain is brain tumor. A tumor is nothing but excess cells growing in an uncontrolled manner. Brain tumor cells grow in a way that they eventually take up all the nutrients meant for the healthy cells and tissues, which results in brain failure. Currently, doctors locate the position and the area of brain tumor by looking at the MR Images of the brain of the patient manually. This results in inaccurate detection of the tumor and is considered very time consuming.

A Brain Cancer is very critical disease which causes deaths of many individuals. The brain tumor detection and classification system is available so that it can be diagnosed at early stages. Cancer classification is the most challenging tasks in clinical diagnosis.

This project deals with such a system, which uses computer, based procedures to detect tumor blocks and classify the type of tumor using Convolution Neural Network Algorithm for MRI images of different patients. Different types of image processing techniques like image segmentation, image



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AUTOMATIC TRAFFIC CONTROL SYSTEM FOR AMBULANCE USING RF MODULE

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Abstract: Congestion trouble is a reality which contributed big effect at the delivery gadget in u. s . This motive many issues mainly while there are emergency instances at visitors' mild junctions which can be usually busy with such a lot of motors. Conventional strategies of visitor's mild structures are not able to cope with the continuing troubles surrounding congestion. The cutting-edge visitor's mild fashions aren't perfect to address issues inclusive of visitor's jams, ease of get admission to for emergency motors and prevention of accidents. A congestion manage gadget is designed if you want to resolve those issues. This gadget turned into designed in the sort of manner that it must be activated while it acquired sign from ambulance primarily based totally on radio frequency (RF) transmission and used microcontroller to alternate the collection returned to the regular collection earlier than the emergency mode turned into activated.

1.1 INTRODUCTION

In each shrewd visitor's control gadget, visitors' mild manage is critical. In visitors' mild monitoring, the collection of inexperienced lighting fixtures and the period of inexperienced lighting fixtures are the 2 maximum great variables to consider. Most visitors' lighting fixtures in many nations encompass constant mild collection and mild time duration. Priority crews' strategies, however, at the opposite hand, are appropriate for stable or regular visitors, now no longer for dynamic visitors. In the existing kingdom of operation, the collection of inexperienced mild is installed with-out thinking of the opportunity of the presence for emergency precedence vehicle. As a response, emergency motors inclusive of, police cars, hearthplace trucks, ambulances and different varieties of emergency motors wait in visitors' factors at intersection, heading off their arrivals at specific end result and vacation spot withinside the lack of existence and property. The present visitors' manage gadget has a number of hazards due to its constant time approach used. The visitors' sign will now no longer alternate primarily based totally at the actual time visitors on street close to the junction of or extra roads. Due to this the visitors' congestion cannot be managed correctly and the usage of street can not be achieved to its most limit. In u . s . like India, day via way of means of day, the no of motors on street is growing because of which congestion is a chief trouble. Traffic congestion ends in lengthy ready time, gas loss and additionally the cash wastage. Congestion consequences in pollutants which in flip influences the living. In India visitors' is non-lane primarily based totally and chaotic, so congestion manage furnished must be better. A visitors' mild manage gadget designed the use of RF. Over the opposite technology RF has benefit due to the fact it's far value green gadget and there could be no interruption in communicate even in horrific climate conditions. RF is a Radio Frequency that is a wi-fi technology.

1.2 EMBEDDED SYSTEM

An embedded gadget is one form of a pc gadget specially designed to carry out numerous responsibilities want to get admission to, process, shop and additionally manage the facts in diverse electronics-primarily based totally structures. Embedded structures are a aggregate of hardware and software program in which software program is normally referred to as firmware this is embedded into the hardware. One of its maximum critical traits of those structures is, it offers the o/p in the time limits. Embedded structures guide to make the paintings extra ideal and

convenient. So, we often use embedded structures in easy and complicated gadgets too. The packages of embedded structures specially contain in our actual existence for numerous gadgets like microwave, calculators, TV far flung manage, domestic protection and neighbourhood visitors' manage structures, etc.



Automated Virus Defect Detection In Fruits Using Image Segmentation

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ABSTRACT—*The emergence of Nipah virus (NiV) infection into the pig population and transferred to human population. It can be mostly affected in banana. Banana disease diagnosis is very essential in earlier stage in order to cure and control them. Generally, the naked eye method is used to identify the diseases. In this method experts are involved who have the ability to detect the changes in banana color. This method involves lots of efforts, takes long time and also not practical for the large fields. Machine learning algorithm in image can offer an alternative solution in plant monitoring and such an approach may anyway be controlled by a professional to offer his services with lower cost. It includes image segmentation and image classification approach to predict various types of diseases. Image segmentation includes active contour method and image classification approach which includes neural network algorithm to predict various types of diseases.*

Keywords—Machine Learning, Image Segmentation, Active Contour, Neural Network

1, INTRODUCTION

In imaging science, image processing is processing of images using mathematical operations by using any form of signal processing for which the input is an image, a series of images, or a video, such as a photograph or video frame; the output of image processing may be either an image or a set of characteristics or parameters related to the image. Most image processing techniques involve treating the image as a two-dimensional signal and applying standard signal-processing techniques to it. Images are also processed as three-dimensional signals with the third-dimension being time or the z-axis. Image processing usually refers to digital image processing, but optical and analog image processing also are possible. This article is about general techniques that apply to all of them. The acquisition of images (producing the input image in the first place) is referred to as imaging. Closely related to image processing are computer graphics and computer vision. In computer graphics, images are manually made from physical models of objects, environments, and lighting, instead of being acquired (via imaging devices such as cameras) from natural scenes, as in most animated movies. Computer vision, on the other hand, is often considered high-level image processing out of which a machine/computer/software intends to decipher the physical contents of an image or a sequence of images (e.g., videos or 3D full-body magnetic resonance scans). In modern sciences and technologies, images also gain much broader scopes due to the ever-growing importance of scientific visualization

SOS Implementation With Camera Facilities

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ABSTRACT

The system defines the task SOS (Save Our Souls) means it is a system which will manage the emergency situations and provide solution using android application. The goal of the project is to develop an android application that lets its users to send notification through mail in case of an emergency or a panic situation. The users can send emails on the press of single button. The phone number, mail id and camera set from within the application. The notification will be send with person's image. The app can capture the human face in real time and send to the emergency contacts. This is very helpful in tracking the whereabouts of the person. Women's safety is a big concern which has been the most important topic till date. As ladies ought to travel late night generally, it's necessary to remain alert and safe. Most of the females these days carry their Smartphone with them, so it is necessary to have at least one the personal safety apps installed. Here we introduce an app which ensures the safety of people. This helps to identify and call on resources to help the one out of dangerous situations. This is a common app for using all kind of people especially women for their safety. In this application user need to feed five contacts these are the people who will receive notifications via email in case of an emergency or any dangerous situations. In case they are in dangerous situation or attacked by any person, user will click one button and the message will pass on fiver users' mail id and the attacker face captured and send to emergency contact's mail ID. The system designs the android application as emergency app in mobile phones

1.INTRODUCTION

Android is a mobile operating system developed by Google, based on the Linux kernel and designed primarily for touch screen mobile devices such as smart phones and tablets. Android's user interface is mainly based on direct manipulation, using touch gestures that loosely correspond to real-world actions, such as swiping, tapping and pinching, to manipulate on-screen objects, along with a virtual keyboard for text input. The basic aim of the system is to develop a low cost solution for SOS System which can apply to various domains of the industrial and personal use just by using the very common mean i.e. mobile with android enabled.

2.EXPERIMENTAL METHODS OR METHODOLOGY

The aim of the project is to develop an Android application that lets its users to send notifications in case of an emergency or a panic situation. The users can send emergency alert messages with image on the press of a single button. This is very helpful in tracking the where about of the person. Women's safety is a big concern which has been the most important topic till date. As ladies ought to travel late night generally, it's necessary to remain alert and safe. Most of the females these days carry their Smartphone with them, so it is necessary to have at least one the personal safety apps installed. Here we introduce an app which ensures the safety of people. This helps to identify and call on resources to help the one out of dangerous situations. This is a common app for using all kind of people especially women for their safety. The users can send emergency alert messages with image on the press of a single button. This is very helpful in tracking the where about of the person

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Extraction and Investigation of In-Vitro Antioxidant and Antimicrobial activity of Acacia Pennata

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ABSTRACT:

Acacia pennata L. is a medicinal plant that has been used in traditional medicine for centuries. As microbes become more resistant to antibiotics, phytochemical screening of medicinal plants for antioxidant and antimicrobial activities has become more common. Using the heated continuous percolation (Soxhlet) process, the dried leaves were powdered and extracted with methanol solvent. Many infections can be treated with phytochemicals that have antibacterial properties. The existence of primary, secondary, and secretory metabolites, such as phenolic chemicals, alkaloids, tannins, saponins, anthraquinones, phenols, terpenoids, flavonoid steroids, carbohydrates, oil, and resins, determines a plant's pharmacological efficacy. The antioxidant activity was determined using the DPPH and RPA methods. Bacteria that are Gram Positive Staphylococcus aureus is a kind of bacteria.

Keywords: Extraction, Phytochemical, Antioxidant and Antimicrobial Activity of Acacia Pennata.

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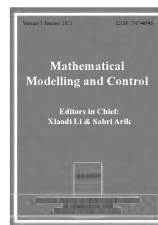
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INTRODUCTION:

A chemical molecule that shields cells from free radical damage. The oxidation of biological molecules is thought to be involved in a wide range of pathogenic events. Reactive oxygen species (ROS) such as OH, HO₂, O₂⁻, H₂O, and reactive nitrogen species (RNS) such as NO, NO₂, ONOO⁻ are the most frequent free

radicals known to entail such oxidative damage. (1), and (2) Natural antioxidants have the potential to be multifunctional. The mechanism that is active or dominant in a given setting is determined by the circumstances, but this has an impact on the kinetics and hence the antioxidant activity. Inconsistent results have been recorded





Research article

Existence theory of fractional order three-dimensional differential system at resonance

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Abstract: This paper deals with three-dimensional differential system of nonlinear fractional order problem

$$\begin{aligned} D_{0+}^{\alpha} v(\varrho) &= f(\varrho, \omega(\varrho), \omega'(\varrho), \omega''(\varrho), \dots, \omega^{(n-1)}(\varrho)), \quad \varrho \in (0, 1), \\ D_{0+}^{\beta} v(\varrho) &= g(\varrho, v(\varrho), v'(\varrho), v''(\varrho), \dots, v^{(n-1)}(\varrho)), \quad \varrho \in (0, 1), \\ D_{0+}^{\gamma} \omega(\varrho) &= h(\varrho, v(\varrho), v'(\varrho), v''(\varrho), \dots, v^{(n-1)}(\varrho)), \quad \varrho \in (0, 1), \end{aligned}$$

with the boundary conditions,

$$\begin{aligned} v(0) = v'(0) = \dots = v^{(n-2)}(0) = 0, \quad v^{(n-1)}(0) = v^{(n-1)}(1), \\ v(0) = v'(0) = \dots = v^{(n-2)}(0) = 0, \quad v^{(n-1)}(0) = v^{(n-1)}(1), \\ \omega(0) = \omega'(0) = \dots = \omega^{(n-2)}(0) = 0, \quad \omega^{(n-1)}(0) = \omega^{(n-1)}(1), \end{aligned}$$

where $D_{0+}^{\alpha}, D_{0+}^{\beta}, D_{0+}^{\gamma}$ are the standard Caputo fractional derivative, $n - 1 < \alpha, \beta, \gamma \leq n$, $n \geq 2$ and we derive sufficient conditions for the existence of solutions to the fraction order three-dimensional differential system with boundary value problems via Mawhin's coincidence degree theory, and some new existence results are obtained. Finally, an illustrative example is presented.

Keywords: fractional differential equation; coincidence degree theory; resonance

1. Introduction

In the recent years, the glorious developments have been envisaged in the field of fractional differential equations due to their applications being used in various fields such as blood flow phenomena, electro Chemistry of corrosion, industrial robotics, probability and Statistics and so on, refer [1–7]. In particular, the fractional derivative has been used in lot of physical applications such as propagation of

fractional diffusive waves in viscoelastic solids [8], charge transmit-time dispersion amorphous semi-conductor [9] and a non-Markovian diffusion process with memory [10].

Although fixed point theorems like the Banach contraction principle and the Schauder fixed point theorem are used to establish the existence of solutions, stronger conditions on the nonlinear functions involved limit their application to a limited number of problems. We employ Mawhin's topological degree theory method to include



A study on n-HyperSpherical Neutrosophic matrices

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Abstract. The n-HyperSpherical Neutrosophic matrices (n-HSNMs), an extension of the Spherical Neutrosophic matrices, are proposed in this study. We investigate the basic properties of n-HSNMs and compare the idea n-HSNMs with spherical fuzzy matrices. Then, it looks at the characteristics of specific mathematical operations, like max-min, algebraic product, min-max, algebraic sum, and complement. Additionally, scalar multiplication ($n\mathcal{S}$) and exponentiation (\mathcal{S}^n) operations of an n-HSNM \mathcal{S} are created and their advantageous properties are illustrated using algebraic operations. Then, we present a new operation ($\textcircled{\@}$) on n-HyperSpherical Neutrosophic matrices and look at the distributional rules that result from combining the operations (\oplus , \otimes , \wedge , and \vee).

Keywords: Neutrosophic sets; Spherical fuzzy matrix; n-HyperSpherical Neutrosophic matrix; Algebraic sum and product.

AMS Subject Classification: 03E72, 08A72, 15B15.


1. Introduction

Khan et al. [5] and Im et al. [4] both established the notion of an intuitionistic fuzzy matrix (IFM) to broaden the idea of Thomason's [11] fuzzy matrix. Every element in an IFM is represented by $\langle \mu_{a_{ij}}, \nu_{a_{ij}} \rangle$ along with $\mu_{a_{ij}}, \nu_{a_{ij}} \in [0, 1]$ and also $0 \leq \mu_{a_{ij}} + \nu_{a_{ij}} \leq 1$. As

V. Muthukumaran, M. Sathish Kumar, I. Silambarasan, R. Udhayakumar and SAID BROUMI, A study on n-HyperSpherical Neutrosophic matrices

Article

Oscillation of Emden–Fowler-Type Differential Equations with Non-Canonical Operators and Mixed Neutral Terms

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Abstract: The study of the symmetric properties of differential equations is essential for identifying effective methods for solving them. In this paper, we examine the oscillatory behavior of solutions of Emden–Fowler-type mixed non-linear neutral differential equations with both canonical and non-canonical operators. By utilizing integral conditions and the integral averaging method, we present new sufficient conditions to ensure that all solutions are oscillatory. Our results enhance and extend previous findings in the literature and are illustrated with suitable examples to demonstrate their effectiveness.

Keywords: Emden–Fowler equation; oscillation; mixed neutral; third order; Riccati technique



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1. Introduction

In this paper, we are concerned with Emden–Fowler-type differential equations with non-canonical operators and mixed neutral terms

$$(q_1(\iota)(q_2(\iota)|\mathcal{N}'(\iota)|^{\gamma-1}\mathcal{N}'(\iota))' + p_1(\iota)|y(q_1(\iota))|^{\alpha-1}y(q_1(\iota)) + p_2(\iota)|y(q_2(\iota))|^{\beta-1}y(q_2(\iota))) = 0, \quad (1)$$

for $\iota \geq \iota_0$ where $\mathcal{N}(\iota) = y(\iota) + r(\iota)y(\tau(\iota))$. Throughout this paper, we will assume that the following conditions hold:

(A₁) $q_1(\iota), q_2(\iota), r(\iota) \in C([\iota_0, \infty), \mathbb{R}_+)$ and $0 < r(\iota) \leq r_1 < 1$, where $\mathbb{R}_+ = (0, \infty)$;

(A₂) $p_1(\iota), p_2(\iota) \in C([\iota_0, \infty), \mathbb{R}_+)$, α, β, γ are positive constants with $0 < \alpha < \gamma < \beta$;

(A₃) $\tau(\iota), \varrho_i(\iota) \in C([\iota_0, \infty), \mathbb{R}_+)$, $\tau(\iota) \leq \iota, \varrho_i(\iota) \leq \iota, \lim_{\iota \rightarrow \infty} \tau(\iota) = \lim_{\iota \rightarrow \infty} \varrho_i(\iota) = \infty$, where $i = 1, 2$, and $\tilde{\alpha} = \min\{\gamma, \alpha\}, \tilde{\beta} = \min\{\gamma, \beta\}$.

By a solution of (1), we mean a function $y(\iota) : [T_y, \infty) \rightarrow \mathbb{R}$ such that $\mathcal{N}(\iota) \in C^3[T_y, \infty)$, $q_2(\iota)|\mathcal{N}'(\iota)|^{\gamma-1}\mathcal{N}'(\iota) \in C^2[T_y, \infty)$, $q_1(\iota)(q_2(\iota)|\mathcal{N}'(\iota)|^{\gamma-1}\mathcal{N}'(\iota)) \in C^1[T_y, \infty)$ and satisfies (1) on $[T_y, \infty)$. We will assume that every non-trivial solution $y(\iota)$ of (1) under consideration here is continuable to the right and satisfies $\sup\{|y(\iota)| : \iota \geq T\} > 0$ for all $T \geq T_y$. We suppose that (1) possesses such a solution. A non-trivial solution of (1) is called oscillatory if it has arbitrary large zeros on $[T_y, \infty)$, otherwise it is called non-oscillatory. Equation (1) is called oscillatory if all of its solutions are oscillatory.

In the present paper, we shall discuss the following three cases:



Article

Discussion on the Approximate Controllability of Hilfer Fractional Neutral Integro-Differential Inclusions via Almost Sectorial Operators

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Abstract: This paper focuses on the approximate controllability of Hilfer fractional neutral Volterra integro-differential inclusions via almost sectorial operators. Almost sectorial operators, fractional differential, Leray-Schauder fixed point theorem and multivalued maps are used to prove the result. We start by emphasizing the existence of a mild solution and demonstrate the approximate controllability of the fractional system. In addition, an example is presented to demonstrate the principle.

Keywords: Hilfer fractional system; multivalued maps, sectorial operators; approximate controllability

MSC: 26A33; 34A08; 34K30; 47D09



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1. Introduction

Controllability is a well-known (quantitative and qualitative) feature of a control system that is important in many control issues in finite and infinite dimensional domains. In recent decades, researchers have been drawn to control problems, and substantial contributions to theory and applications have been made. Controllability is a fundamental quality of a control system that aids in solving various control problems, such as the stabilization of unstable systems via feedback control. As a result, difficulties in controllability for various linear, nonlinear stochastic, and deterministic dynamic systems have garnered much attention. Furthermore, approximate controllability is becoming increasingly common, and approximate controllability is frequently sufficient in applications. For further details, consult the articles in [1–5].

In modern mathematics, the fundamentals of fractional computation and the fractional differential equation have taken center stage. The idea of fractional computation has now been tested in various social, physical, signal, image processing, biological, control theory, engineering, etc., challenges. However, it has been demonstrated that fractional differential equations may be valuable for describing various situations. For many realistic applications, fractional-order models are superior to integer-order models. The research articles in [6–13] are concerned with the theory of fractional differential systems, and readers will find several fascinating findings about fractional dynamical systems.

Neutral functional differential systems have received a lot of interest recently since they are used in many areas of applied mathematics, biological models, electronics, fluid dynamics, and chemical kinetics. Neutral structures with delays or without delays, in

Highly flexible metal/metal oxide embedded carbon nanofiber membranes as binder-free materials for Lithium-ion batteries

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Summary

Free-standing materials with good flexibility is of great interest for energy storage applications. Herein, N-MnO carbon nanofibers (N-MnC) composite is synthesized by introducing one dimensional MnO₂ nanowires (1D MnO₂ NWs) into PAN and PVB composite solution through electrospinning. The synthesized membranes are directly used as freestanding electrodes for lithium-ion battery (LIB) applications. During synthesis, MnO₂ NWs transformed into MnO spherical nanoparticles (NPs) and embedded on carbon nanofibers (CNFs), resulting in an N-MnC composite. N-MnC composite exhibited a discharge/charge capacity of 1405/1114 mAhg⁻¹ at a current density of 0.1 Ag⁻¹ as an anode for LIBs which is much better than that of pure MnO, MnO₂ electrodes. The outstanding performance of N-MnC composite may be credited to its good electrical conductivity, structural integrity, low dimension CNFs (high surface area), and good contact between CNFs and MnO NPs. Hence, the simple and cost-effective strategy of fabricating freestanding electrodes with high flexibility and good conductivity is the most promising approach for addressing practical concerns at the device level, especially for lightweight and flexible electronics.

KEYWORDS

electrochemistry, electrospinning, flexible electrodes, Li-ion batteries, MnO

1 | INTRODUCTION

The progress of energy storage systems has acknowledged remarkable attention for a few decades, as they can power electric vehicles, mobile electronic devices, etc.¹ LIBs and supercapacitors (SCs) became widely used energy storage systems, in which LIBs exhibit a significant role in various applications of electronic devices owing to their exceptional properties.^{2,3} By considering the significance of electrode

materials in electrochemical reactions, various metal oxides have been investigated so far.^{4,5} Especially, the Mn oxides family has been used extensively in LIBs owing to their abundance, affordability, environmental benignity, etc.⁶⁻¹⁰ Among various oxides of the Mn family, MnO has its own significance in LIBs.¹¹⁻¹³ In contrast, poor conductivity and volume expansion issues diminish better electrochemical performance, which further hindered commercialization. Therefore, it is extremely essential to modify or improve the characteristics of materials for better electrochemical performance.

P. Divya and N. Guru Prakash equally contributed to this work.



Metal/Metal Oxide (N-MnO/rGO) Encapsulated Carbon Nanofiber Composites for High-performance Li-ion Batteries

P. Divya¹ · Nunna Guru Prakash² · Tae Jo Ko² · P. Rosaiah^{1,2}

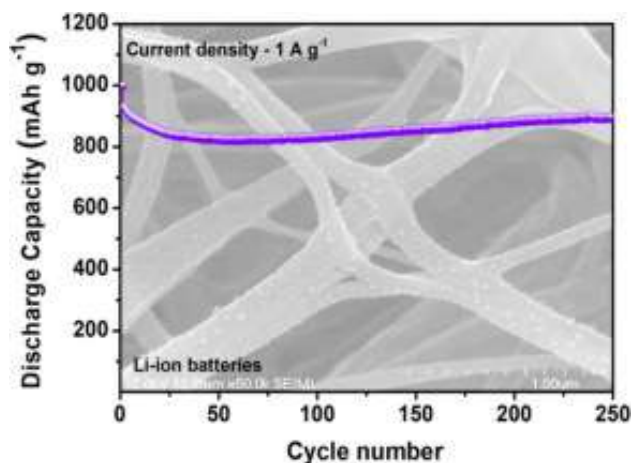
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Abstract

Synthesis of highly flexible freestanding electrode materials is of great interest for energy storage applications. The electrospinning technique is used to develop reduced graphene doped manganese oxide carbon nanofiber (N-MnO/rGO CNFs) composite electrodes. During the carbonization process, MnO₂ nanowires (NWs) are converted into MnO nanoparticles (NPs) and distributed on the CNFs. XRD, Raman, and XPS are used to investigate the structural properties and chemical state of composites. The N-MnO/rGO CNFs composite had a large specific surface area of 135.67 m² g⁻¹. The N-MnO/rGO CNFs composite membranes are used as freestanding electrodes in lithium-ion battery (LIB) applications. The N-MnO/rGO CNFs composite membrane showed a specific discharge capacity of 1478 mAhg⁻¹ at 0.1 Ag⁻¹. Moreover, it exhibited outstanding cycling performance by maintaining a capacity of 894 mAh g⁻¹ for 250 cycles even at high current density of 1 Ag⁻¹. N-MnO/rGO CNFs freestanding electrodes are promising candidates for practical application in flexible electronics.

Graphical Abstract



Keywords Li-ion batteries · Flexible electrodes · Electrospinning · MnO · rGO

P. Divya and N. Guru Prakash have equally contributed to this work.

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Introduction

Energy and the environment are always critical aspects because they are intertwined with human lifestyle. In the current state of the world, massive use of fossil fuels and rapidly increasing uninvited environmental contamination are severe concerns. [1, 2]. In addition, the widespread use of electronics in everyday life has contributed to a continuous



Flexible MnO-encapsulated carbon nanofiber composites as high-performance freestanding supercapacitor electrodes

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ABSTRACT

One-dimensional (1D) materials with good flexibility are of great interest for energy storage applications. Herein, MnO carbon nanofiber (CNF) composites are synthesized by electrospinning. During carbonization, MnO was crystallized as spherical nanoparticles (NPs) and embedded on CNFs. The MnO/CNFs composite exhibited the highest specific capacitance (C_s) of 460 Fg^{-1} at 1 Ag^{-1} with an outstanding capacitance retention of 93.5% after 10,000 cycles. The assembled SC maintained 26 Fg^{-1} even at a high current density of 5 Ag^{-1} and sustained capacitance retention of 82.5% for 10,000 cycles. Moreover, it showed a maximum energy density of 23.1 W h kg^{-1} . Hence, the simple and cost-effective strategy of fabricating freestanding electrodes with high flexibility and good conductivity is the most promising approach for addressing practical concerns at the device level, especially for lightweight and flexible electronics.

1 Introduction

Massive fossil fuel consumption, coupled with quickly rising unwelcome environmental contamination, is a serious concern in the current state of the world. These primary issues have driven researchers

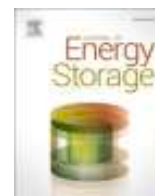
to develop effective, environmentally friendly, and long-lasting electrochemical energy storage devices recently [1–3]. Supercapacitors and ultracapacitors have attracted a lot of attention and are crucial components of today's energy storage field. Supercapacitors are the most promising because they differ from batteries and electrostatic/electrolytic

P. Divya and N. Guru Prakash have equally contributed to this work.

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Research papers

One-pot synthesis of flower-like Ni-Co/reduced graphene oxide layered double hydroxide nanocomposites as advanced electrodes for high-performance asymmetric supercapacitors

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ABSTRACT

Novel electrode materials with appropriate architectures are always desired to increase the energy density of supercapacitors. Here, the design and fabrication of NiCo-layered double hydroxides (NC-LDH) in composition with reduced graphene oxide (rGO) were prepared as high-performance electrodes for supercapacitors. In particular, a facile and one-pot scheme was designed for the growth of NC/rGO-LDH composites, which exhibited a high specific surface area of 204 m²/g. The compositional features of the composites, i.e., a two-dimensional flower-like layered architecture and conductive rGO, contributed to their highly impressive specific capacitance (1913.5 F/g at 1 A/g) and excellent cyclic performance. Furthermore, an asymmetric supercapacitor was designed using NC/rGO-LDH composites as the positive electrode and activated carbon as the negative electrode, which displayed a high energy density of 59.2 Wh/kg at a power density of 750 W/kg.

1. Introduction

The unprecedented technological developments and economic progress enhance the lifestyle of modern-day mankind with energy and environment playing a vital role in it [1]. Hence, nowadays, energy consumption has been intensely increasing and reaching unpredictable high levels, creating a lot of demand for alternative energy sources [2]. Furthermore, the unprecedented exploitation of natural resources greatly affects the environment. Hence, it is time to focus on the development of efficient, sustainable, and environment-tolerant energy storage devices to address these environmental effects and the related crisis [3].

So, energy storage systems, such as lithium-ion batteries (LIBs) and supercapacitors (SCs), have been drawing remarkable attention these days as they can power electric vehicles, mobile electronic devices, etc. [4–6]. In particular, owing to their exceptional properties, such as fast

charge/discharge kinetics, high power density, and uncompromised cyclic performance, SCs have been considered significant energy storage systems. However, the inferior energy density of SCs in comparison to batteries limits their high-power applications [7]. Hence, the major concern of the SC technology is to enhance the energy density of the SC by developing advanced materials using innovative methodologies [8,9]. Specifically, the electrode materials play a vital role in high-performance SCs with exceptional capacities and energy densities [10,11]. So, recently, extensive research has been conducted to find advanced SC electrode materials with exceptional properties. For instance, advanced SC electrode materials have been developed using metal chalcogenides, polymers, metal-organic framework-based materials, etc. [12–14]. Moreover, researchers attempted several ways, like the development of electrolytes, novel substances, and composite materials, for use in SCs to enhance their rate performance and cyclic stability [15–18].

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Graphene based magnetite carbon nanofiber composites as anodes for high-performance Li-ion batteries

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For energy storage applications, highly flexible free-standing electrodes are ideal for the fabrication of electrochemical cells. In the present study, reduced graphene doped magnetite carbon nanofiber (rGO/Fe₃O₄ CNF) composite electrodes were prepared using a facile and eco-friendly electrospinning technique. X-ray diffraction (XRD), Raman spectroscopy, and X-ray photoelectron spectroscopy (XPS) were used to investigate the structural properties and chemical state of the composites. The rGO/Fe₃O₄ CNF composites had a high specific surface area of 253.85 m² g⁻¹ and a pore volume of 0.243 cm³ g⁻¹. The rGO/Fe₃O₄ CNF composites can be employed without any conductive agents as an anode for lithium-ion batteries (LIBs). As a freestanding electrode, the rGO/Fe₃O₄ CNF composite demonstrated a specific discharge capacity of 1514 mA h g⁻¹ at 0.1 A g⁻¹. Furthermore, it demonstrated excellent cycling performance, maintaining a capacity of 1126 mA h g⁻¹ for 200 cycles despite a high current density of 1 A g⁻¹. The enhanced electrochemical performance is ascribed to the flexible freestanding characteristics of the electrode and the synergistic effect between one dimensional (1D) CNFs, Fe₃O₄ nanoparticles (NP) and rGO. Therefore, freestanding rGO/Fe₃O₄ CNF electrodes can be used as potential candidates for practical applications in flexible electronics.

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Introduction

Nowadays, energy consumption is soaring to unpredictably high levels, resulting in a substantial demand for alternate energy sources.¹ Furthermore, the unprecedented exploitation of natural resources greatly affects the environment. Consequently, it is essential to focus on the development of efficient, environmentally-friendly, and sustainable energy storage systems to address this issue.² Lithium-ion batteries (LIBs) and supercapacitors (SCs), which can power electric vehicles, mobile electronic devices, *etc.*, have gained considerable attention recently.^{3–5} LIBs have been regarded as capable power sources in the scientific and industrial domains due to their outstanding qualities, such as their extended lifetime, high capacity, and high energy density.^{6,7}

It is well known that the electrode materials play a vital role in LIBs.^{8,9} Hence, there is a requirement to develop novel

electrode materials with exceptional properties to achieve high-performances. Several metal oxides including Mn, Ni, Ti, V, Mo, Co, Fe oxides, *etc.*, have been extensively investigated so far.^{10–12} Specifically, Fe oxide composites have found widespread application in energy storage because of their exceptional properties. Fe₃O₄ is unique among the Fe oxides (FeO, Fe₂O₃, and Fe₃O₄) since it shows both capacitive and battery characteristics. Moreover, Fe₃O₄ is a more desirable material for energy storage applications because of its exceptional properties, such as its high storage capacity (928 mA h g⁻¹), accessibility, low-cost, and eco-friendliness.^{13–15} However, the electrochemical performance of Fe₃O₄ composites, especially their cyclic performance at high currents, has proven to be inadequate due to poor conductivity, severe constituent agglomeration, and structural uncertainty. Consequently, this deficiency can be solved by tailoring the surface architecture of Fe₃O₄ composites and incorporating conductive agents, such as graphene, activated carbon, carbon nanotubes, *etc.* into their structure.¹⁶

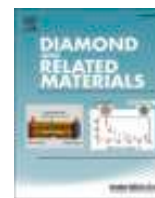
The use of carbonaceous materials (GO, RGO, CNFs and carbon nanotubes (CNT)) to enhance battery performance and stability has recently witnessed significant growth.^{17–19} Hence, these materials can be developed by tailoring their dimensions and doping them with suitable conductive agents. As one of the most practical and cost-efficient methods to develop one-dimensional

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Ultra-long MnO₂ nanowire-entrenched reduced graphene oxide composite electrodes for energy storage

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ABSTRACT

Supercapacitors are particularly interested in low-dimensional materials. Herein, MnO₂ nanorods and ultralong MnO₂ nanowires (NWs) were synthesized along with reduced graphene oxide (rGO) via a simple hydrothermal method. MnO₂ NWs/MnO₂ NRs crystallize with a low diameter of 20–30 nm when synthesized in situ with rGO. The basic crystallographic structure and chemical state of the composites were investigated using XRD, Raman, and XPS. The MnO₂ NWs/rGO composite had the highest specific capacitance (C_s) of 536 Fg⁻¹ at a current density of 1 Ag⁻¹ with an outstanding capacitance retention of 92.3 % over 10,000 cycles, which is much superior than the pure MnO₂ NWs/MnO₂ NRs and MnO₂ NRs/rGO composites. Moreover, MnO₂ NWs/rGO composites demonstrated excellent rate performance by sustaining a specific capacitance of 321 Fg⁻¹ even at high current density of 5 A g⁻¹, which is 60 % of its initial capacitance. Therefore, present strategy is the most viable option for fabricating high-performance electrode materials to address practical concerns of supercapacitors.

1. Introduction

In the past few years, significant effort and technological innovations have been devoted to the discovery of novel materials with enhanced storage performance [1–3]. Nowadays, Li-ion batteries (LIBs) and supercapacitors (SCs) have emerged as prospective sources to address the energy storage concerns [4–7]. LIBs have emerged as one of the most promising power sources in the scientific and industrial domains due to their extended lifespan, high energy density, and high capacity. SCs and ultracapacitors have received significant attention and are crucial components of today's energy storage field. Supercapacitors are more promising than batteries and electrostatic/electrolytic capacitors due to their rapid charge/discharge rates, high energy density and power density, enhanced cyclic stability, excellent capacity retention, and minimum charge separation. However, supercapacitors store less energy than Li-ion batteries, which presents a critical challenge for practical applications [8,9]. Moreover, the commercial applications of SCs are

limited by a number of factors. In supercapacitors, electrode materials play a crucial role in achieving excellent capacitive performance. Since the composition and structure of materials affect their electrochemical properties, it is possible to enhance the specific capacitances of electrode materials by designing compatible compositions and structures. Recent research has focused on discovering innovative SC electrode materials with exceptional characteristics [10].

The Manganese oxide family has a wide range of applications among transition metal oxides, including batteries, supercapacitors, magnetism, catalysis, sensors, microwave absorption, etc. [11–14]. As Mn has various valence states (Mn²⁺, Mn³⁺, and Mn⁴⁺), Mn may be crystallized as various oxides like MnO, MnO₂, Mn₂O₃, and Mn₃O₄ [15–18]. In particular, MnO₂ stands out as a prospective alternative for both SCs and LIBs owing to its exceptional properties, such as fast charge-discharge, enhanced stability, low-cost material, and eco-friendliness. However, the poor performance of pure MnO₂ as an electrode limits its usage in practical applications. Various carbonaceous

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Identification of Phytoconstituents in the Ethanol Extract of *Vetiveria Lawsonii* Roots

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ABSTRACT

Plants are playing an important role for the medicinal treatments due to the presence of bioactive compounds. The folk medicinal system is more effective than the modern medicinal systems because of their very low side effects. The selected plant, *Vetiveria lawsonii* is an Indian plant belongs to the family Poaceae. The plants of Poaceae family are used as analgesic, antibacterial, antiperspirant/ deodorants, astringent, depurative, digestive, emmenagogue, galactagogue, insect repellents and skin tonic. The present work dealt with the identification of phytoconstituents in the ethanol extract of the selected plant. The Soxhlet extraction was used for the preparation of ethanolic extract. The bioactive constituents were screened by the standard method, qualitatively. The GC-MS study was performed which revealed the presence of 6 phytoconstituents in the ethanol extract which can be the cause for the medicinal values of the plant. These results prominence further research on the isolation of the bioactive compounds.

Keywords: Soxhlet, GC-MS study, antibacterial, isolation, phytoconstituents, analgesic.

INTRODUCTION

The traditional systems of medicine together with folklore systems continue to serve a large portion of the population, particularly in rural areas, in spite of the advent of the modern medicines. It is worthwhile to note that, about 80% of the human populations in India are still dependent on nature for remedies and this can be well understood from the fact that almost all systems of medicine are largely based on drugs of plant origin.

Vetiver is a tall, perennial grass which grows wild in drier, periodically flood inundated tracts, of western and north-central India. It produces spongy, much branched, root system (khus roots) with fine rootlets, containing fragrant oil which is a perfume by itself. The dry aromatic roots are also used to make curtains, mats, fans and other fancy goods as the product emits a sweet cooling aroma for a long period when moistened. The oil is used as a valuable fixative in blending of perfumes, cosmetics and scenting of soaps.

Its cultivation is largely scattered over small holdings in Kerala, Karnataka, Tamil Nadu and Andhra Pradesh and to a lesser extent in Uttar Pradesh. Considering the high quality of oil produced in India compared to Indonesia, Pakistan, Senegal, Sri Lanka, Brazil and Haiti. The north Indian type vetiver oil has a good potential for export. It also highlights the utilization of vetiver as MAP in Thailand that includes the utilization of vetiver in traditional medicine, in pest control, and as fragrant materials.

The present study is the investigation of the presence of various phytoconstituents in the ethanol extract of the

selected plant, *Vetiveria lawsonii* roots by GC-MS study along with the qualitative screening.

MATERIALS AND METHODS

Extraction

The pulverized plant material was successively extracted with ethanol (1:10 w/v) by hot continuous percolation method using Soxhlet extractor. The extract was concentrated by using a rotary vacuum evaporator and subjected to dryness to yield crude residue. These residues were used for preliminary phytochemical screening of secondary metabolites.

Preliminary Qualitative Phytochemical Screening

The ethanol extract of *Vetiveria lawsonii* roots was analyzed for the presence of phytochemicals according to standard methods¹.

GC – MS Study

The ethanol extract was filtered with sodium sulphate [2 g] and concentrated the extract to 1mL by bubbling nitrogen into the solution. The extracted material was taken for GC-MS analysis. The Gas chromatography–Mass spectroscopy (Agilent 6890-JEOL GC-Mate-II Mass Spectrometer) was fitted with electron impact (EI) mode. The Helium was used as the carrier gas at a flow rate of 1 mL/min. The temperature was programmed at 70 °C for 5 min then increased to 300 °C at the rate of 15 °C/min. The temperature of injector and EI detector (70 eV) were 280 °C and 300 °C, respectively. Each plant extract of 1 µL was injected with a Hamilton syringe to the GC / MS manually. The relative %

KINETIC ANALYSIS OF OXIDATION OF α -HYDROXY ACIDS BY TETRAMETHYLAMMONIUM CHLOROCHROMATE IN MICELLES MEDIUM

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ABSTRACT

The oxidation of pentaamineCo(II)complexes of bounded and unbounded α -hydroxy acids by Tetramethylammonium Chlorochromate (TMACC) is studied at four different temperatures in micelles medium and the rate of the reaction is observed through UV-Visible spectrophotometer at 504 nm. Under constant solution conditions, the addition of micelles enhances the rate of the reaction. The kinetic and stoichiometric data are consistent with the appropriate mechanism.

Keywords: α -hydroxy Acids, Cobalt, Kinetics, Micelles, Oxidation, Stoichiometry, Tetramethylammonium Chlorochromate.

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INTRODUCTION

A literature survey reveals that no report is available on the kinetics of oxidation of α -hydroxy acids by TMACC. The present studies are aimed at determining induced electron transfer reactions in pentaamineCo(II)complexes of both bounded and unbounded α -hydroxy acids with TMACC in presence of micelles.¹⁻⁷ Primary aliphatic alcohols may be oxidized either as alcohols, yielding corresponding oxoacids or they may undergo oxidative decarboxylation to yield a ketone. Several studies on pyridinium fluorochromate⁸, quinolinium fluorochromate⁹, iso quinolinium dichromate¹⁰, tetrahydropyranyl ethers⁶, and tetraethylammonium chlorochromate¹¹ have been used to study the kinetics and mechanism of various organic compounds. TMACC is an orange powder, which is prepared by the dropwise addition of CrO₃ in a 6 N HCl solution of Tetramethylammonium Chlorochromate at room temperature. The micelles used in the present work are Sodium lauryl Ether Sulphate (NaLES), Benzethonium Chloride (BTCl), and Polysorbate 80. The bounded ligands like α -hydroxy acids, dicarboxylic acids, and α -amino acids, have a saturated fragment separating Co(II) from the site of initial reaction irradiation of this Co(II)complexes may involve reduction at the Co(II)center, and carbon-carbon fission.¹² To execute such a process, kinetic studies on the rates of disappearance of Co(II)coupled with rates of formation of Co(II) and organic products will be useful. This has formed part of the present work, along with the estimation of quantum yield in each case. A qualitative correlation between quantum yield and the electronic influence can also be attempted. The reaction has been evolved by the inner-sphere mechanism.

Hybrid Cross-Linked Bio Polymer-Epichlorohydrin/Fe₃O₄ Nanocomposite for As(V) Adsorption: Kinetic, Isotherm, Thermodynamic, and Mechanism Study

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ABSTRACT: *In the present work, iron-doped particle Carboxymethylchitosan nanocomposite cross-linked with epichlorohydrin (CMC-EPC/INC) were prepared, by a chemical precipitation method, characterized and evaluated for the removal of As(v) from an aqueous solution. The adsorbent was characterized by FT-IR, XRD, and SEM. Key parameters, including adsorbent dosage, pH, temperature, initial ion concentration, and contact time were investigated and found to be 0.4g, pH 4, 308K, 10 mg/L, and 120 min, respectively. Mechanism study reveals the availability of amino groups in biopolymer, which act as active adsorption sites towards the arsenic anion. On evaluating isotherm models of Langmuir, Freundlich, Temkin, Elovich, Redlich-Peterson, and Dubbin-Radushkovich, it was found that the Langmuir isotherm model fitted better compared to other models having a maximum adsorption capacity of 28.99mg/g, a high regression coefficient value of 0.9988, least chi-square value of 0.1781 and validated by D-R isotherm also. The process was found to follow monolayer adsorption and pseudo-second-order kinetics. Thermodynamic parameters such as ΔS , ΔH , and ΔG indicated the spontaneous, endothermic, and physisorption nature of adsorption. Competing anions did not cause a significant reduction in the adsorption behavior of arsenic. Successful regeneration of the adsorbent implies its applicability to the removal of arsenic from real-life wastewater.*

KEYWORDS: *Arsenic; Hybrid Biopolymer nanocomposite; Epichlorohydrin; D-R Isotherm; Thermodynamic.*

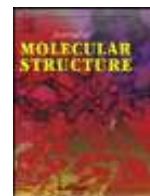
INTRODUCTION

Arsenic is a pervasive element in the environment and has been known as a notorious toxic substance to man and living organisms for centuries [1]. Groundwater Arsenic is

primarily associated with oxidative weathering and geochemical reactions. The major role in the mobilization of arsenic is played by the amount of reactive carbon in the

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Synthesis, characterization, molecular docking and molecular dynamics simulations of benzamide derivatives as potential anti-ovarian cancer agents



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ABSTRACT

A novel (E)-N-cinnamoyl-4-methoxybenzamide (CMB) and (E)-3-chloro-N-cinnamoyl-4-methoxybenzamide (CCMB) were synthesized and characterized by using Fourier-transform infrared spectroscopy (FT-IR), Nuclear Magnetic Resonance (NMR) and Ultraviolet-visible spectroscopy. Theoretical vibrational spectra, NMR and some electronic properties of CMB and CCMB have been calculated using Density Functional Theory (DFT), B3LYP functional with a 6-311G++ basis set. UV-Vis spectra obtained by Time-dependent-DFT/ polarizable continuum model (PCM) methods were also compared to experimentally reported spectra. In addition, the molecular electrostatic potential (MEP) and frontier molecular orbitals (FMOs) were calculated and discussed for the title compounds. The present study examined the use of two molecules as matrix metalloproteinases (MMPs) inhibitors for the treatment of ovarian cancer. Molecular docking results show that both CCMB and CMB bind to MMP-2 with higher affinity (-8.50 and -8.35 kcal/mol) than MMP-1 (-8.24 and -8.07 kcal/mol). According to MD simulations, values of the solvent accessible surface area changed very little from the title molecules. During the MD simulation, the number of H-bonds formed between CMB and CCMB towards targets was also determined.

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1. Introduction

Benzamide is a carboxylic aromatic amide that is employed in the synthesis of a variety of chemical compounds. The amide group ambidentate nature causes isomers when forming metal complexes because it can coordinate through either nitrogen (N) or oxygen (O) atoms. The N and O chelating sites present in the amide group are critical components of biological polymeric materials, such as proteins and peptides [1–5]. Halogen substituted benzamide derivatives have antipsychotic, anticancer, and antiemetic properties. Because of their potent Hedgehog signaling inhibitory activity, they have the potential to be used to treat human tumors viz., medulloblastoma, prostate leukaemia, pancreatic melanomas, and basal cell carcinoma. These are brand-new miRNA-21 inhibitors.

MiR-21 inhibited tumor cell proliferation while increasing taxol sensitivity in vitro [3]. Pei Huang et al. synthesized benzamide derivatives and studied their biological activities using both experimental and theoretical methods. Also, the antitumor assessment exhibits considerable activity against the HT-29, A549, and MKN45 cell lines [6].

Cinnamyl chloride is also an important chemical intermediate that can be found in a variety of pharmaceutical formulations, fragrances, and flavouring agents [7,8]. Xu et al. developed an anti-chlorocyclopropanes-producing dual catalyst system for photocatalyst isomerization of acyclic cinnamyl chlorides. Organic chemists have been fascinated by cyclopropane-containing molecules for decades [9]. Many pharmaceuticals and metabolites contain the cyclopropyl group. This privileged functional group is used in drug-like molecules to improve metabolic stability, potency and reduce plasma clearance [10].

Ovarian cancer is the most lethal female reproductive cancer [11]. GLOBOCAN estimates 314,000 new diagnosed women and

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A Study on Employee Safety Measure in Rajsriya Automotive Industries Pvt Ltd., Unit-I At Hosur

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ABSTRACT

A study on employee safety measures in the Rajsriya automotive industries pvt ltd. UNIT-IIt has developed by the employee safety facilities are different. Topics to be discussed in the project they are employee working environment for the Organization, safety for employee welfare, job satisfaction and development of employee for the organization. The very logic behind providing welfare schemes is to create efficient, healthy, loyal and satisfied employee force for the organization. They are providing facilities for employees to desire the highly satisfied minimum of employee will be acceptance in the satisfied categories. The research selected a sample size of 150 employees in Hosur. The employee satisfied with the selection for the percentage to calculate the chi-square analysis to using the research process. The purpose of this paper is to present the result of a survey on the safety of employee towards the various level of satisfied categories will be applied for the firm.

INTRODUCTION TO THE STUDY

Safety is the state of being "safe", the condition of being protected from harm or other non-desirable outcomes. Safety can also refer to the control of recognized hazards in order to achieve an acceptable level of risk.

SAFETY MEASURES REPRESENTATIVES

They are full-time workers nominated or elected and designated in writing by the employer after the employer and workers consulted one another and reached an agreement about who will be welfare and safety representatives. Further they must at least be familiar with the circumstances and conditions at that part of the workplace for which they are designated. Agreement must also be reached on the period of office and functions of the welfare and safety representative and must be settled amongst the employer and the workers.

The occupational Safety Act, 1993, requires the employer to bring about and maintain, as far as reasonably practicable, a work environment that is safe and without risk to the welfare of the workers. This means that the employer must ensure that the workplace is free of hazardous substances, such as benzene, chlorine and microorganisms, articles, equipment, processes, etc. that may cause injury, damage or disease. Where this is not possible, the employer must inform workers of these dangers, how they may be prevented, and how to work safely, and provide other protective measures for a safe workplace.

However, it is not expected of the employer to take sole responsibility for welfare and safety. The Act is based on the principle that dangers in the workplace must be addressed by communication and cooperation between the workers and the employer. The workers and the employer must share the responsibility for welfare and safety in the workplace. Both parties must pro-actively identify dangers and develop control measures to make the workplace safe.

In this way, the employer and the workers are involved in a system where welfare and safety representatives may inspect the workplace regularly and then report to a welfare and safety committee, who in turn may submit recommendations to the employer. To ensure that this system works, every worker must know his or her rights and duties as contained in the Act.

10 tips for work safety

Understand the risks: Once you know the particular hazards of your job or workplace, you can take steps to reduce your risk of work-related injury or illness.

Reduce workplace stress: Common causes include long hours, heavy workload, job insecurity and conflicts with co-worker's or bosses. Stress can lead to depression, sleeping difficulties and problems with concentration.



A Study on Employee Life Style of Marine Workers

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ABSTRACT

The shipping industry is one of our oldest industries and still plays an important role in our modern society. Today, over 55 000 cargo ships are active in international trade. The fleet is represented in over 150 countries, crewed with over 1.5 million sailors working around the world. The different types of cargo being transported are goods for consumers, food, raw material, cars and fuel, just to name a few. The market for shipping services can influence trade flows, the products that countries sell, and how price shocks reverberate through trade. The international shipping industry is responsible for the carriage of around 90% of world trade. Shipping is the life blood of the global economy. Without shipping, intercontinental trade, the bulk transport of raw materials, and the import/export of affordable food and manufactured goods would simply not be possible. Ships are technically sophisticated, high value assets (larger hi-tech vessels can cost over US \$200 million to build), and the operation of merchant ships generates an estimated annual income of over half a trillion US Dollars in freight rates. Ships and the maritime industry as a whole are increasingly reliant on computerized and internet-connected technology. At the same time, criminals, state actors, and terrorists are becoming more skilled and sophisticated in their ability to compromise these systems for nefarious purposes. The maritime industry uses computers and cyber-dependent technologies for navigation, communications, ship systems monitoring and control, cargo transfers, access control, passenger and cargo screening, fire detection, financial and other business transactions, and other purposes. Attacks on these systems can result in such consequences as groundings, collisions, cargo loss, environmental pollution, disruption of trade, and human injuries and fatalities.

INTRODUCTION

Safety and welfare measures are inevitable to any organization where workers are involved. An organization's responsibility to its employees extends beyond the payment of wages for their services. The employee's safety and welfare on and off the job within the organization is a vital concern of the employer. Welfare helps to improve employee retention and creating positive image for longer time period. It helps to motivate and improve morale of the employees. Some of the facilities and services which fall within the preview of labour welfare like adequate canteen facilities, accommodation arrangements, recreational facilities, medical facilities and transportation. Providing a safe and healthy environment is a pre-requisite for any productive effort.

NEED OF THE STUDY

Safety and Welfare is the main concern for the employees in marine industry. Its focus is on employee safety and it can provide for higher morale and productivity in the workplace. This is due to the perception that the industry truly cares about the health and well-being of its employees, thus creating a sense of pride for the industry. Increased productivity as it correlates to safety and morale is a difficult metric to measure, but forward-thinking organizations realize that it does exist and can therefore justify the costs of their safety programs as compared to the productivity benefits that they provide. In contrast to measuring productivity as it relates to safety, the indirect costs of employee injuries are much more measurable. The above mentioned points stand as motivation factors to undertake the present study. Accordingly appropriate objectives are framed and studied using primary and secondary data.

OBJECTIVES OF THE STUDY

- [1]. To study the perception of the employees regarding the safety and welfare measures provided to them.
- [2]. To analyze if the level of satisfaction is different among the various categories of employees and departments.
- [3]. To suggest provision of more safety and welfare measures to improve the performance of the employees.



A Study on Customer Buying Behaviour towards Sri Jayashree Food Products At Salem

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ABSTRACT

The most crucial issue for the marketers is to identify the needs of the consumers. Only the identification of needs is of no value unless and until this is transformed in to a meaningful and appropriate satisfiers. For this whole process of converting needs into actual satisfaction one needs to understand the complete make up of consumer's mind, and this process is known as consumer behavior.

Learning is essential to the consumption process; consumer behaviour is largely learned behavior. We acquired most of our attitudes, values, tastes, preferences, symbolic meanings and feeling through learning. Human culture and social class, institutions such as schools and religious organizations, family, friends, mass media and advertising provide learning experiences that influence the kind of life style the consumers seek and the products they consume.

INTRODUCTION ABOUT THE STUDY

Consumer Buying Behaviors refers to the actions taken (both on and offline) by consumers before buying a product or service. This process may include consulting search engines, engaging with social media posts, or a variety of other actions. It is valuable for consumer businesses to understand this process because it helps businesses better tailor their marketing initiatives to the marketing efforts that have successfully influenced consumers to buy in the past.

Four factors influencing consumer buying behaviors are:

Cultural Factors - Culture is not always defined by a person's nationality. It can also be defined by their associations, their religious beliefs or even their location.

Social Factors - Elements in a person's environment that impact the way they see products.

Personal Factors - These may include someone's age, marital status, budget, personal beliefs, values, and morals.

Psychological Factors - A person's state of mind when they are approached with a product will often determine how they feel not only about the item itself but the brand as a whole.

OBJECTIVES OF THE STUDY

- To study on Consumer Buying Behavior on food product with special reference to Sri Jayashree food corn at Salem
- To identify the factor influencing the Consumer while purchasing paper product in food industry
- To know the Buying Behavior the recent level to buy the product
- To know the expectation of Consumer to improve the food product & purchasing power in the organization

SCOPE OF THE STUDY

The market survey was conducted only with the Buying Behavior of food industry. The size of the study was conducted from 60 respondents only. The scope of the study improve that the whether attract to Consumer's Awareness by the way of quality products in Salem district.



A Study on Employee Safety Measure towards Sri Varalakshmi Startch Industries With Reference To Salem

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ABSTRACT

Employee safety measure at the workplace is one of the important measure of life at work place. Organizations ensure that employees are exposed to a risk level which do not affect their physical, emotional and mental health. Also the organizations do not entertain any activity in its premises that will disturb the work life of the employees. Employees are trained appropriately about the work and about all precautionary measures that will prevent accidents at the work place. In addition to these, all the organizations have rigorous checking process that avoid intrusion of outsiders into the office premises. It is sincerely thought that the welfare notion will help the organizations to maintain harmonious industrial relations and more lasting industrial peace to tackle effectively the social problems and attain human welfare.

INTRODUCTION

Safety is the state of being "safe", the condition of being protected from harm or other non-desirable outcomes. Safety can also refer to the control of recognized hazards in order to achieve an acceptable level of risk.

TYPES OF WORKPLACE SAFETY

Safety hazards: Safety hazards are the most common type of hazard and they are present in virtually every workplace at one time or another. These hazards are unsafe conditions in a facility that can cause injury, illness, or even death. Think of hazards like spills, working from heights, unguarded machinery, wiring issues, confined spaces, forklifts, and more.

Biological hazards: Biological hazards affect those who work with animals, people, or infectious plant materials. People who are working at day-care centres, colleges, hospitals, nursing homes, etc. can be exposed to blood or other body fluids, fungi and mild, bacteria, viruses, and more.

Physical hazards: Physical factors encompass environmental factors that can cause harm to workers even when they're not directly touched. Radiation, high sunlight exposure, working in extreme temperatures, and constant loud noises are all examples of physical hazards.

Ergonomic hazards: These hazards can be the hardest to identify, but they can easily cause strain (and eventually injury) to the body. Workers can face ergonomic hazards if their workstations or chairs are improperly adjusted, if they're frequently lifting, if they're making repetitive and awkward movements and other situations where the body and muscles are overworked.

Chemical hazards: Any chemicals in the workplace can put workers at risk. Some chemicals are far more dangerous than others, but even common chemicals can cause skin irritation, illness, or respiration problems.

SAFETY MEASURES REPRESENTATIVES

They are full-time workers nominated or elected and designated in writing by the employer after the employer and workers consulted one another and reached an agreement about who will be welfare and safety representatives. Further they must at least be familiar with the circumstances and conditions at that part of the workplace for which they are designated. Agreement must also be reached on the period of office and functions of the welfare and safety representative and must be settled amongst the employer and the workers.

The occupational Safety Act, 1993, requires the employer to bring about and maintain, as far as reasonably practicable, a work environment that is safe and without risk to the welfare of the workers. This means that the employer must ensure that the workplace is free of hazardous substances, such as benzene, chlorine and microorganisms, articles,

A STUDY ON CUSTOMER PERCEPTION TOWARDS YONEX SHOES WITH REFERENCE TO SALEM

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ABSTRACT

In modern days, Yonex Shoes are seen as things of adornment, fashionable items that are utilized to improve self-image. The aim of study customer perception is to predict customer responses in market toward yonex shoes. Because customer is king and the success of a company thrives on understanding its customers. This paper helps us to know that what type of brand is to be adopted by the customers with the change in life style, the demand of customers also goes on changing. Customers needs and wants, becomes first preference for the yonex brand. This paper helps us to know Customer perception towards Yonex shoes in Salem city.

Keywords: customer perception ,yonex shoes

1.INTRODUCTION

Customer perception is a marketing concept that tells us what customers think about a brand or a company or its offerings. It can be positive or negative feelings, perceptions, inhibitions, predispositions, expectations or experiences that a customer has. If you understand the concept of customer perception, you will figure out that it is arguably the most important factor that decides the success of a brand, product or a company as a whole. How a particular brand or company is positioned also plays a vital role in this. The characteristics of a brand and its personality play a big role.

Perception is a process by which individuals organize and interpret their sensory impressions in order to give meaning to their environment. However, what one perceives can be substantially different from objective reality. It need not be, but there is often disagreement. For example, it's possible that all employees in a firm may view it as a great place to work – favorable working conditions, interesting job assignments, good pay, an understanding and responsible management – but, as most of us know, it's very unusual to find such agreement

2.METHODOLOGY

According to industrial research institute in research methodology, research always tries to search the given question systematically in our own way and find out all the answers till conclusion. For finding or exploring research questions, a

researcher faces lot of problems that can be effectively resolved with using correct research methodology.

2.1 Sample size

The sample size in the study is 80.

2.2 Statistical tools

- Simple percentage method
- Chi-square test

PERCENTAGE METHOD

This method is used to compare two or more series of data, to describe the relationship or the distribution of two or more series of data. Percentage analysis test is done to find out the percentage of the response of the response of the respondent. In this tool various percentage are identified in the analysis and they are presented by the way of Bar Diagrams to have better understanding of the analysis.

$$\text{Percentage} = \frac{\text{No. of Respondents}}{\text{Total Respondents}} \times 100$$

CHI-SQUARE TEST

It is one of the simplest and widely used non-parametric test in statistical work. The quantity chi-square describes the magnitude of the discrepancy between theory and observation. Which is defined as?

$$\text{Chi - Square} = \frac{\sum(o_i - E_i)^2}{E_i}$$

O_i = Observed frequency,

E_i = Expected frequency

In general, the expected frequency for any can be calculated from the following equations

$$E = \frac{RT \times CT}{N}$$

E = Expected frequency, CT = Column total,

RT = Row total, N = Total number of observations

A STUDY ON STRESS MANAGEMENT TOWARDS HOSPITAL EMPLOYEES WITH REFERENCE TO NAMAKKAL

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ABSTRACT

This research paper is to know the reasons for stress among hospital employees. Increasing work pressure, financial needs and recent technology are some factors that increase stress for the employee. This is based upon the current study made on above topic. It is clearly picturing the problem of hospital employee faces at work place and causes for stress in employee. Stress is unavoidable on the part of employees irrespective of the gender. Stress management is an art and not all can do it well.

Keywords: Stress; Work Pressure; Stress Management; hospital Employee

1. INTRODUCTION

Occupational stress Managements is a broad term which encompasses education, facilitation and training in the impact that stress is having on an individual or group. The field of stress managements teaches and promotes skills to relieve the accumulated. Stress management is a wide spectrum of techniques and psychotherapies aimed at controlling a person's level of stress, especially chronic stress, usually for the purpose of and for the motive of improving everyday functioning. Stress produces numerous physical and mental symptoms which vary according to each individual's situational factors.

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E = Expected frequency, CT = Column total,

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A STUDY ON CUSTOMER PREFERENCE TOWARDS GOOGLEPAY WITH REFERENCE TO NAMAKKAL

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ABSTRACT

In today world, smart phone has become an important area of one's lifestyle. Mobile users can nowadays use their Smartphones to form money transactions or payments by using applications installed within the phone. There are several mobile wallets which give these services. Mobile wallets are digital versions of traditional wallets that somebody would carry in their pocket. They supply payment services through which the individuals/business can receive/send money via mobile devices. This paper throws strike the customer preference towards the e-wallet services provided by Google pay. It focuses on the services provided by Google pay wallet and its satisfaction level.

Keywords: online payment, Mobile Transaction.

1. INTRODUCTION

Consumer preference is defined as a set of assumptions that focus on consumer choices that result in different alternatives such as happiness, satisfaction, or utility. The entire consumer preference process results in an optimal choice. Consumer preferences allow a consumer to rank different bundles of goods according to levels of utility, or the total satisfaction of consuming a good or service. It is important to understand that consumer preferences are not dependent upon consumer income or prices. So a consumer's capacity to buy goods does not reflect a consumer's likes or dislikes. Customer preference is what type of product an individual customer likes and dislikes. The sweetener blend added to the company's most famous brand is formulated for each country based on customer preference. As part of the 'Digital India' campaign, the government aims to construct a 'digitally empowered' economy that is 'Faceless, Paperless and Cashless'. There are different types and modes of digital payments. Some of these include the use of debit/credit cards, internet banking, mobile wallets, digital payment apps, Unified Payments Interface (UPI) service, Unstructured. The mobile wallet, which is called M- wallet, digital wallet, or E wallet, refers to a mobile technology that is used identical to a real wallet. It admits customers to purchase their products online with greater ease. Google Pay is a digital wallet platform and online payment system developed by Google. Google pay makes it easy to keep track of purchases, redeem loyalty points and get personalized suggestions to help the customers to save time and money. An payment system facilitates the acceptance of electronic payment for online transactions

2. METHODOLOGY

According to industrial research institute in research methodology, research always tries to search the given question systematically in our own way and find out all the answers till conclusion. For finding or exploring research questions, a researcher faces lot of problems that can be effectively resolved with using correct research methodology.

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The sample size in the study is 80.

Statistical tools

- Percentage Analysis
- Chi-square test

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E-BLOOD BANKS ANALYSIS USING LSTM MACHINE LEARNING TECHNIQUES

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Abstract :As technology advances rapidly, complexity in data processing increases. To prevent and nullify these complexities, it is crucial to keep systems up to date with the latest upgrades. However, some government organizations, such as blood banks, still rely on traditional systems that lead to rising complexities and an inefficient system. To address this, a proposed solution aims to shift blood banks' traditional processes into digital technology. This approach would not only provide a highly efficient method for resolving huge complexities, but it would also enable proper analysis of vast amounts of data to achieve predictions that could help prevent future anomalies and medical emergencies caused by poor traditional data management and processing techniques. The predicted results would also help maintain a proper track record of future blood unit stock supply for the respective blood banks. Overall, the proposed system would offer an effective solution to the challenges faced by government blood banks.

Keywords : Data Analysis, Machine Learning, LSTM

significantly as a result of the population growth boom, these systems became incredibly ineffective in processing and handling data. These techniques have serious flaws that led to serious ineptitude in medical situations. The slower data management and processing systems prevented medical aids from reaching the vital areas.

To avoid serious crisis situations, traditional techniques and technology urgently need to be upgraded. One of the most effective approaches to assist in resolving the complexities of the previous systems is the idea of E-Blood banks. The e-Blood bank system is an improved version of the previous file management system used by blood banks. All blood transaction and donation records are now properly serialised and stored in an effective digital database system that is free of any binding structures, allowing the system to process large amounts of data instantly and solving complex problems at a breakneck speed. One of the important characteristics of E-Blood bank systems is their proper analysis of data, effective segregation of that data, and capacity to handle and analyse massive amounts of data.

I. INTRODUCTION

A blood bank functions similarly to a storage facility for a sufficient supply of blood units from various blood types. These blood banks typically store all the transaction information of donors and recipients using a straightforward data management system, and in some cases even file systems. These strategies were simple to use for transaction data records on a smaller scale. However, as complexity grew

II. LITERATURE SURVEY

Information about blood bank systems in urban and rural areas was gathered during the survey. According to the results, hospitals in urban areas have their own blood bank facilities, but rural areas lack them because there are fewer hospitals there and maintaining them is expensive. Many businesses have their own online blood bank system, which eliminates the need for human labour and speeds up the



FACE DETECTION BASED ATTENDANCE SYSTEM USING CNN BASED TEMPERATURE MONITORING

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Abstract :The face serves as a person's unique identifier. Over time, there have been significant advancements in exploiting this physical feature through image processing techniques. Attendance tracking is a common practice in schools, colleges, and libraries. The conventional method for attendance involves the professor calling out student names and recording attendance manually. However, with the advent of machine learning techniques, computer vision applications have been significantly explored. This project aims to utilize machine learning concepts in face recognition for automatic attendance systems. The face detection and recognition algorithms are used to provide computer systems with the ability to quickly and accurately identify human faces in images or videos, enabling the systems to take attendance automatically. Moreover, the system incorporates temperature measurement using an mlx90614 infrared temperature sensor along with face detection. This project holds significant potential in improving attendance tracking and promoting efficiency in various academic and non-academic institutions.

Keywords : Attendance system, Face detection, Temperature monitoring, CNN

I. INTRODUCTION

These days, technology aims to impart a wealth of knowledge-based technological innovations. One of the fascinating subfields is deep learning, which employs a variety of learning algorithms to provide an appropriate output during testing and enables a machine to train itself by providing a number of datasets as input. These days Participation is considered as

a significant variable for both the understudy as well as the instructor of an instructive association. The machine now automatically detects students' attendance records and stores the collected data thanks to advances in deep learning technology. By and large, the participation arrangement of the understudy can be kept up with in two unique structures specifically,

- Manual Attendance System (MAS) A manual student attendance management system requires a subject-specific teacher to manually call each student's name and record their attendance. Manual participation might be considered as a tedious interaction or in some cases it occurs for the educator to miss somebody or understudies might answer on different occasions on the shortfall of their companions. Thus, the issue emerges when we contemplate the conventional course of gauging participation in the study hall. The Automatic Attendance System (AAS) is our choice to address all of these issues.

The Automated Attendance System (AAS) uses face recognition technology to automatically estimate a student's presence or absence in the classroom. It is also possible to determine whether a student is awake or asleep during the lecture, and it can be used during exam sessions to guarantee the student's presence. The presence of the understudies not set in stone by catching their faces on to a superior quality screen video web-based feature, so it turns out to be exceptionally dependable for the machine to grasp the presence of the multitude of understudies in the homeroom. The two most common approaches to human face recognition are the Feature-based approach and the Brightness-based approach. The Feature-based approach, also known as the local face recognition system, is used to point out key facial features like the eyes, ears, nose, mouth,



IOT-BASED ADVANCED AUTOMATED WASTE MANAGEMENT AND SEGREGATION SYSTEM

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Abstract: The purpose of this system is to address the issues and limitations of current waste management and segregation practices, while also creating opportunities for improvement. It involves an automated waste management and segregation system that utilizes the Internet of Things (IoT) technology. The proposed system is installed throughout urban areas and equipped with embedded technology to separate and monitor the fill level of waste bins. Authorities are notified of bin status and locations via the Internet, reducing the need for human involvement, and cutting down on time and costs.

Keywords : IOT, Waste Management, Sensor, Segregation

I. INTRODUCTION

India is currently facing significant environmental challenges due to inadequate waste collection, treatment, transport, and disposal practices. The generation and disposal of waste is a complex issue that poses a threat to public health and the environment. With the increasing urban population, the current waste management system is unsustainable and poses a risk to public health and the environment. It is crucial to manage waste properly to maintain a healthy lifestyle and prevent the spread of diseases. The overflowing of dustbins on a daily basis creates an unhygienic environment, making waste segregation essential. Segregating waste into dry and wet waste reduces the amount of waste that is landfilled and also minimizes air and water pollution. This application assists in managing and segregating waste by deploying dustbins throughout the city with an embedded system that helps in tracking garbage bins at a minimal cost. An SMS text is sent to the municipal corporation once a bin is

filled and reaches its maximum level, and the respective authorities take immediate action once the bin's status is notified via the Internet. This proposed system uses ultrasonic sensors, node MUC, and servo motor technology.

II. LITERATURE SURVEY

The following are summaries of various studies related to waste management using IoT technology.

Padmakshi Venkateshwara Rao and Pathan Mahammed Abdul Azeez, in 2020[1], developed an "IoT based Waste Management for Smart Cities" to address challenges such as inadequate waste collection and treatment. The system uses ultrasonic sensors, a node MCU, a Blynk app, and a servo motor to track garbage bin levels and notify authorities via SMS when the bin is full.

Nikolaos Baras and Dimitris Ziouzos, in 2020[2], developed a cloud-based smart recycling bin for in-house waste classification. The system uses artificial intelligence and neural networks to classify different types of waste with 93.4% accuracy.

Shashank Shetty and Sanket Salvi, in 2020[3], developed the SAF-Sutra, a prototype of a remote smart waste segregation and garbage level monitoring system. The system is designed for portability and ease of assembly and includes a mobile and web application for user interaction.

Claude-Noel Tamakloe and Dr. Elena v. Rosca [4] introduced a solar-powered, compact smart garbage bin for waste management. The bin can monitor internal garbage levels, compact waste,



Execution of IoT System using Blockchain with Authentication and Data Protection

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Department of MCA, Paavai Engineering College, Namakkal

Abstract: Blockchain allows users and data providers to ensure authentication, authorization and data validity with proper multi-key exchange authentication for user identity and hash key for Blockchain so that the data is not just stored but also validated each time the user access. In this paper, we apply Zero Knowledge proof to a Strong rooms using RFID Card reader and Camera module IoT systems to prove that a prover without disclosing information such as public key enhances the anonymity of Blockchain.

Keywords: IoT, RFID Card Reader, Block Chain, Strong room, Zero Knowledge Proof

I. INTRODUCTION

Internet Of Things (IoT) is the extension of internet connectivity into physical devices and everyday objects. These devices can communicate and interact with others over the internet, and they can be remotely monitored and controlled. The paper introduces Blockchain which is a digital record of transactions. The name comes from the structure, in which individual transactions/records, called blocks are linked together to a single list called chain. Blockchain records transactions and each transaction added to the Blockchain is validated by multiple consumers. These systems are configured to monitor specific types of Blockchain transactions, form a peer-peer network. They work together to ensure each transaction is valid before it is added to the Blockchain. This decentralized network of computers ensures a single system cannot add invalid blocks to the chain. When a new block is added to the Blockchain, it is linked to the previous blocks using a cryptographic hash generated from contents of previous block. This ensures that the chain is never broken and that each block is permanently recorded.

II. PROBLEM STATEMENT

Blockchain technology consumes more energy than any centralized system. Not only does their redundancy cause them to consume more power than an average centralized cloud-based system, but their transaction validation method plays a great role too. First, they require more storage than any other system. The Approaches of authentication use centralized servers, which increases the chances of a single point of failure and the servers getting hacked. The hacking of servers can cause loss of valuable information. To avoid this problem, we need a decentralized system that allows us to identify and authenticate users. The other issue related to centralized servers is that they are managed by a third party, which can modify the data with no user permission. A new system is needed to keep the activity records of a particular user in an immutable way.

III. PROPOSED SYSTEM

IoT, Blockchain Server and Client Application. We have taken the environment of strong room in police station. Smart cards will be given to few authorized staffs working in police station, and when the person swipes card to enter into the strong room, the RFID Card reader scans the value of that particular card swiped by the person, and the camera fixed at a place captures the image of the person swiping the card. The "RFID tag+image" is a transaction which gets stored in the Blockchain ledger. Client on the other hand, to view the transaction, should get registered to the Blockchain server initially. During the registration, Blockchain server shares a secret key to the client on request by encrypting it with the public key by providing the private key. Once the client gets registered and obtains the private key from the Blockchain, that client is said to have been authenticated and authorized. Again, when the client wants to view transactions, he has to regenerate the shared secret by encrypting it with the private key. Blockchain, upon receiving, decrypts it with the public key and checks if the shared secret key is the same given to the client while registering. Once the combination of the secret key is found to have been the same, Blockchain concludes that the client is an authorized person and allows the recent transaction to move to the respective user blocks. Once the transaction moves to user blocks, that particular transaction will be removed from the Blockchain ledger, hence no security breach and data tampering. In order to check the security breach, a hacker application has been developed where in, when a hacker modifies the transactions, then that particular transaction is viewed as a "bug" icon in the user block.



Autonomous Unmanned Aerial Vehicle Navigation Using Reinforcement Learning With Ai

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ABSTRACT: Whether it is for military or civilian use, quadrotor UAV has always been one of research central issues. Most of the current quadrotor drones are manually operated and use GPS signals for navigation, which not only limits the operating range of the drone but also consumes a lot of manpower and material resources. This research mainly studies the method of realizing autonomous flight and conflict avoidance of quadrotor UAV by using multisensor system and deep learning method in extreme flight conditions through track prediction. The convolutional neural network method is used to extract the image information collected by the UAV sensor system. And it uses the cyclic neural network to extract the time feature of the information collected by the UAV sensor. The research results show that the track prediction method based on the deep learning method has higher flight accuracy for quadrotor UAVs. The yaw error of the spatial position is only 2.82%, and the maximum error of the time characteristic error tolerance is only 0.77%.

I. INTRODUCTION

Quadrotor UAV is a common UAV system, and the stability of quadrotor UAV is higher than others due to the balancing effect of four wings. It has been widely used in firefighting, forest monitoring, aerial photography, and other fields and has shown good performance [1]. With the development of technology, the endurance of UAV is becoming stronger and stronger, which makes over the horizon flight possible. However, the autonomous navigation capability of UAV has become the main factor restricting the development of UAV to long-distance and long endurance [2]. The sensors carried by UAV can obtain a large amount of information such as images, which can provide a large amount of data for learning based on vision-based deep learning autonomous navigation methods, which promotes the development of UAV toward autonomous navigation methods [3].

At this stage, the navigation methods of UAVs are mainly divided into inertial navigation, satellite navigation, and navigation based on vision. The inertial navigation method will cause the flight error and yaw trajectory of the UAV to become more and more obvious due to the continuously accumulated error of the gyroscope, which is not suitable for long-range flight [4]. The satellite navigation method is the main navigation method currently use. The error of satellite navigation is relatively small, so it is possible to complete UAV missions at the precise control of human conditions [5]. UAVs use GPS signals for navigation and control, which not only requires highly skilled aircraft professionals but also puts forward higher requirements on the flight area [6]. However, with the continuous development of unmanned technology, people hope that UAVs can replace human beings to perform tasks in dangerous and complex environments [7], which limits the use of GPS navigation methods. With the rapid development of big data technology and image recognition technology, vision-based navigation provides a new way for the navigation mode of UAVs. This is a good idea for UAVs to achieve autonomous flight [8]. GPS navigation relies on signals for navigation, which can provide drones with information such as position and control. Autonomous navigation requires the drone to achieve real-time autonomous flight without any signal indication.



FAKE NEWS DISCOVERY USING MACHINE LEARNING CLASSIFICATION ALGORITHMS

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Abstract : With the widespread use of the internet and social media platforms, people increasingly rely on online resources for news. However, the rapid spread of fake news through these platforms can have far-reaching consequences, such as influencing public opinion and election outcomes. Additionally, spammers use clickbait headlines to generate revenue through advertisements. This paper aims to use Artificial Intelligence, Natural Language Processing, and Machine Learning concepts to perform binary classification of various news articles available online. The goal is to provide users with the ability to differentiate between fake and real news and verify the authenticity of the news publisher's website.

Keywords : Social Media, Fake News, Websites, Classification,

1. INTRODUCTION

As a rising measure of our lives is spent communicating on the web through virtual entertainment stages, an ever increasing number of individuals will generally chase out and consume news from web-based entertainment rather than conventional news organizations.[1] The clarifications for this modification in utilization ways of behaving are inborn inside the idea of those online entertainment stages: (i) Social media news consumption is frequently more timely and less expensive than reading newspapers or watching television; (ii) On social media, it's easier to share, discuss, and discuss the news with friends or other readers. For example, 62% of U.S. grown-ups get news via web-based entertainment in 2016, while in 2012; Only 49% of people said they had read news on social media [1]. Additionally, it was discovered that social media now performs better than television as the primary news

source. Social media has many advantages, but the quality of stories is lower than that of traditional news outlets. However, large quantities of fake news, i.e., news articles containing intentionally false information, are produced online for a variety of purposes, including financial and political gain, as it is inexpensive to provide news online and much faster and easier to spread through social media. By the end of the presidential election, it was estimated that more than one million tweets were associated with the fake news "Pizzagate." The Macquarie Dictionary even named "Fake news" the word of the year in 2016 [2] in recognition of the widespread nature of this new phenomenon. The widespread dissemination of fake news has the potential to significantly harm individuals as well as society. First, fake news can upset the balance of authenticity in the news ecosystem, for example; During the U.S. presidential election of 2016, it is evident that the most widely spread fake news was even more prevalent on Facebook than the most widely accepted genuine mainstream news. Second, consumers are persuaded to simply accept erroneous or biased beliefs by fake news. Counterfeit news is commonly controlled by disseminators to pass on political messages or impact for example, some report shows that Russia has made counterfeit records and social bots to spread bogus stories. Thirdly, fake news alters how real news is interpreted and responded to; for instance, some fake news was simply created to mislead and mistrust individuals; blocking their capacities to separate what's actual based on what's not. to assist in mitigating the negative effects of fake news (both for the benefit of the general public and the news ecosystem as a whole). We must develop methods to automatically identify social media-based fake news [3].

Access to news information is now much simpler and more comfortable thanks to the Internet and social media [2]. Many Internet



DEEP LEARNING CONVENTIONAL NEURAL NETWORK-BASED FACE BIOMETRIC VALIDATION SYSTEM FOR ATM

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Abstract :Automated Teller Machines (ATMs) have become a ubiquitous part of modern life, used by individuals from all walks of life. However, the increasing number of criminals and their activities have made ATM security a pressing concern. Currently, ATM systems rely on access cards and Personal Identification Numbers (PINs) for identity verification, which can be vulnerable to exploitation. To address this issue, there have been significant advancements in biometric identification techniques such as fingerprinting, retina scanning, and facial recognition. To improve ATM security, this paper proposes a model that combines a physical access card with electronic facial recognition technology utilizing Convolutional Neural Networks . The integration of these two technologies would ensure that both the face and account of the user are protected from unauthorized access. In addition, to remotely verify the identity of an unauthorized user, a Face Verification Link will be generated and sent to the account owner through dedicated Artificial Intelligence agents. This proposal recognizes that human biometric features are difficult to replicate and seeks to provide a solution to the problem of account safety by ensuring that only the rightful account owner has access to their accounts.

Keywords: ATM, Biometrics, CNN, Face Recognition

I. INTRODUCTION

One of the most useful developments in the banking industry is the Automated Teller Machine, or ATM. ATMs permit banking clients to profit fast self-overhauled exchanges, like money withdrawal, store, and asset moves.

People can conduct financial transactions without the assistance of a real teller thanks to ATMs. Likewise, clients can benefit banking administrations without visiting a bank office. Most ATM exchanges can be profited with the utilization of a charge or Mastercard. Some transactions do not require a credit or debit card. ATM Fakeness happening in the general public has become exceptionally normal these days. Skimming and Catching of the ATM gadgets have been planned by numerous Robbers. Shoulder Surfing Attack: unauthorized use of ATM cards by someone other than the owner. As a result, the creation of such a system to safeguard customers from fraud and other security breaches is urgently required. Face recognition is a tool for users to verify the card owner and can be used to secure ATM transactions. Banks face a significant issue in the form of financial fraud, and the current secure information stored on the magnetic tape of ATM cards is highly susceptible to theft or loss. By involving face acknowledgment as a device for validating clients in ATMs can be affirmed as the card proprietor. Process for logging into an ATM with a Face-Based ID ATMs with face recognition technology are able to recognize a person's face during a transaction. ATMs will automatically warn cardholders to exercise caution whenever "Shoulder Surfers" attempt to peek over the cardholder's shoulder to obtain his PIN when the cardholder enters it. In the event that the client wears a veil or shades, the ATM will won't serve him until the covers are eliminated. Touchless: Passwords don't need to be remembered. Just taking a gander at the ATM camera will login the card holder in a split second. There is no need for physical contact. Secure: Since your face serves as your



SECURE DATA SHARING IN CLOUDS USING REVERSIBLE IDENTITY-BASED DOUBLE ENCRYPTION WITH TIME STAMP

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Abstract :Cloud computing has gained widespread adoption due to its ability to store massive amounts of data and provide extensive computing power. However, ensuring secure data sharing is crucial for cloud applications. To address this issue, identity-based broadcast proxy re-encryption schemes have been proposed, but they require cloud users to participate in the group shared key renewal process, which can compromise cloud security. To overcome this limitation, a new security notion called revocable identity-based double-encryption with timestamp has been introduced. This scheme enables a user to revoke a set of delegates designated by the delegator from the double-encryption key, which is created and time-stamped for a brief time period during which the delegate can view or download the requested file. This ensures maximum security and privacy. Performance evaluation indicates that the proposed scheme is highly efficient and practical.

keywords :Business to Customer., Cloud Sharing, Encryption, Document Transfer

I. INTRODUCTION

Cloud computing provides users with on-demand access to computer resources, such as data storage and computing power, without requiring active management. However, security and privacy challenges remain a concern. Encryption, particularly Identity-based encryption, is a promising solution to ensure data confidentiality. In some scenarios, such as medical research involving genome data, data owners may want to share encrypted data with specific recipients. Proxy re-encryption can be used to enable complex re-encryption computations in the cloud, allowing for secure

data sharing. To address these challenges, we propose a three-layer storage framework based on fog computing that takes advantage of cloud storage while protecting data privacy. Our framework uses the Hash-Solomon code algorithm to divide data into parts, with a small part stored locally and in fog servers to enhance privacy. Using computational intelligence, our algorithm determines the proportion of data stored in the cloud, fog, and local machine. We have validated the feasibility of our approach through theoretical safety analysis and experimental evaluation, making it a powerful supplement to existing cloud storage schemes.

Web server applications have changed over the past few years from static to dynamic applications. Some flaws in earlier web site design made this progression inevitable. For instance, traditional web site design technologies are not sufficient to move more business activities online, whether in business-to-consumer (B2C) or business-to-business (B2B) industries. Every developer encounters the following main problems when creating web applications:

Scalability: A popular website will attract more visitors, and since this number is growing quickly, web applications must be scalable in order to keep up.

Integration of data and business logic - Since the web is just another means of conducting business, the middle-tier and data-access programmes should be compatible.

Manageability - As websites continue to grow in size, we need a workable management system to control the interaction of the expanding content with business systems.

Personalization — giving the website a



A Transatlantic Approach Consortium Blockchain Architecture Based Digital Currency System

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ABSTRACT: In the big data environment, data are characterized by a large volume, various types, and rapid changes. The consortium blockchain applied in this environment faces the problem of excessive storage of the ledger, and the ledger handling different types of business needs to be isolated to ensure the ledger’s security. To this end, this paper proposes a scalable consortium blockchain architecture based on world state collaborative storage (CBCS). First, a business world state database update method is designed based on sparse Merkle multiproofs, where the collaborative storage of world state is realized under the premise of mutual isolation of the ledger between business domains. Then, a world state consistency verification method based on the rank B+ tree is designed to verify the consistency of the business world state in business domains by the checking sidechain, and a main-side chain cross-anchoring structure is designed to realize secure anchoring of the mainchain and the checking sidechain. Meanwhile, a blockchain transaction trusted tracing method based on two-level certification is developed to enable business nodes to obtain complete blockchain transactions. Finally, the feasibility and efficiency of the proposed mechanism to solve the storage scalability problem in the consortium blockchain are verified through experiments.

I. INTRODUCTION

The current research on the scalability of blockchain storage mainly focuses on the processing of blocks in the chained ledger but ignores the critical role of the state database. The chained ledger ensures the security of a block by connecting it with its front and back blocks. Since the chained ledger is stored in the form of files and direct access to the blockchain transactions in it requires searching the block files one by one, which is inefficient. The world state database contains critical data extracted from the chained ledger and stores the latest values of the world state in the form of key-value pairs. Owing to its characteristics of high value, a small storage space occupation, high query efficiency, and fine-grained slicing, the world state database occupies an important position in the consortium blockchain system. In practice, we can retrieve the required ledger data by searching the world state database, thus satisfying most of the application requirements in the consortium blockchain system. Chen et al. [10] proposed a high-performance consortium blockchain storage architecture for a big data environment. In this architecture, the consortium blockchain ledger is divided into continuous data and state data, an index-based method and a multi-level cache method are designed to process continuous data and state data, respectively. However, this scheme focuses on improving the read-write performance of the ledger but does not address the scalability issue of the consortium blockchain ledger storage.

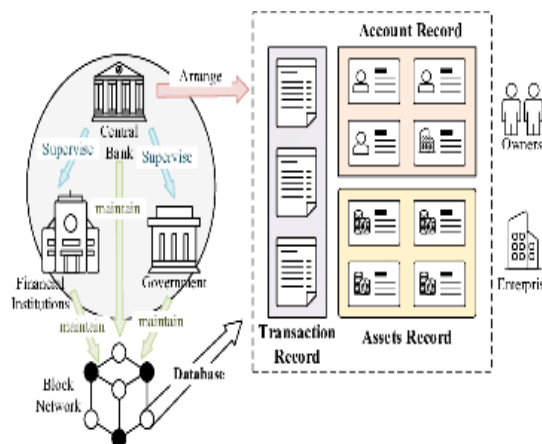


Fig 1: Digital currency scheme