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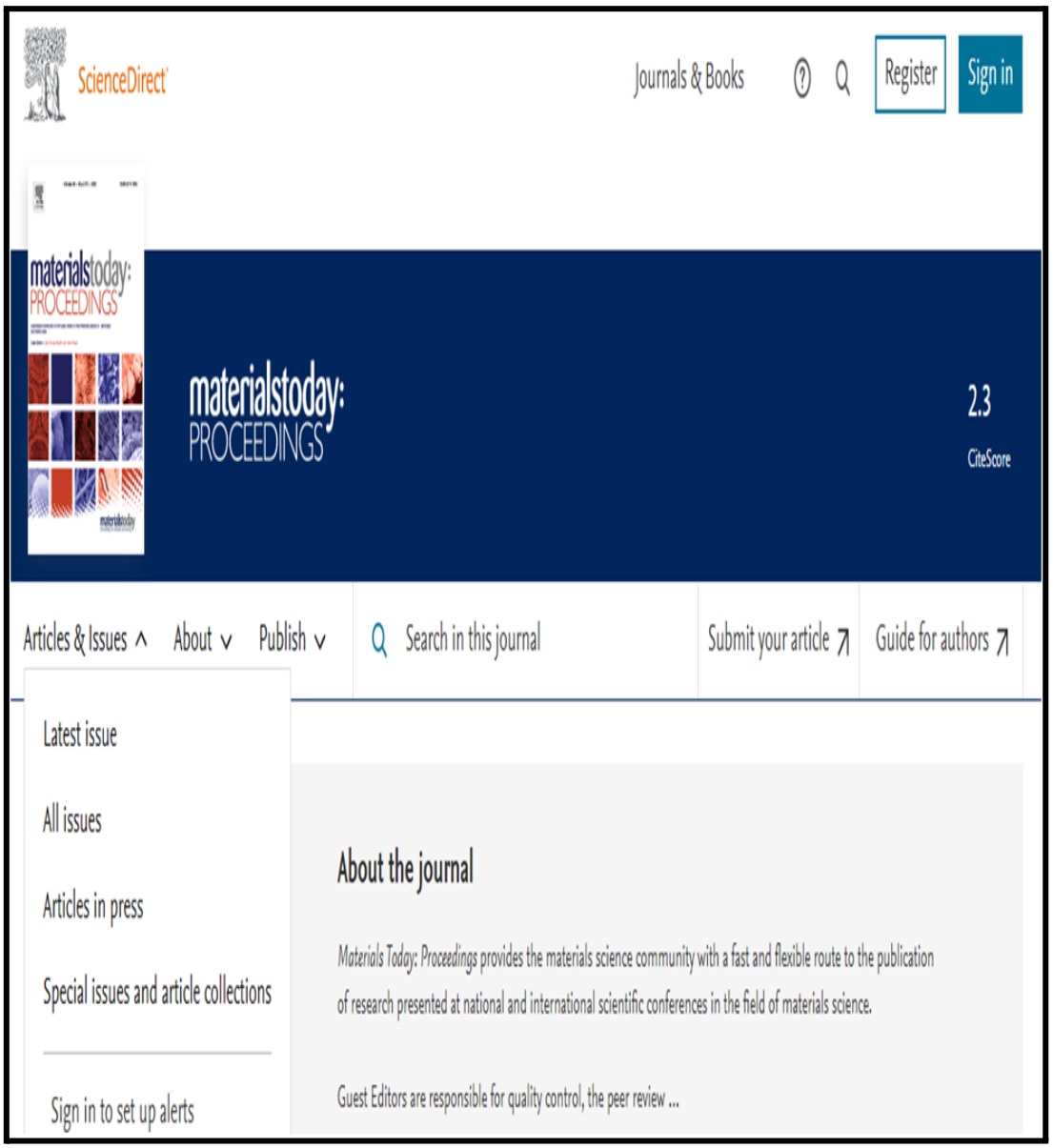
Criterion III: - Research, Innovations and Extension

3.3 Research Publications and Awards 2022

Sr No.	Title of paper	Name of Author	Page No.
1	Effects of stabilization on structures and properties of Electrospun Polyacrylonitrile based carbon nanofibers as a binder free electrode for supercapacitor application	Dr. S. J. Kadam	12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Effects of stabilization on structures and properties of Electrospun Polyacrylonitrile based carbon nanofibers as a binder free electrode for supercapacitor application

Sumit Dubal [a], Sachin Chavan [a], Pradeep Jadhav [a], Sunil Kadam [b], Sachin Dhotre [c]

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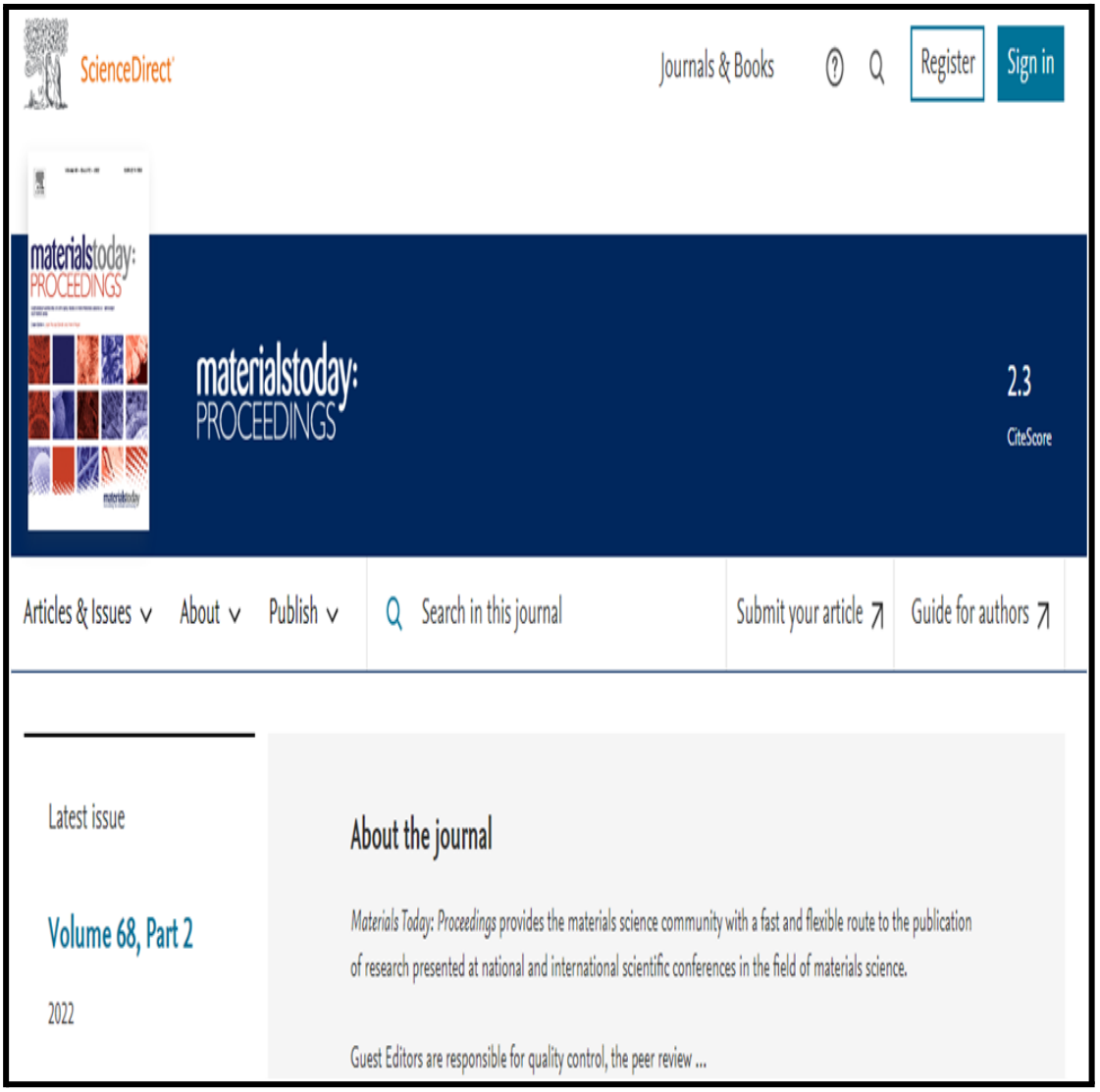
https://doi.org/10.1016/j.matpr.2022.07.250

Abstract

Electrospun nanofibers were produced with Polyacrylonitrile (PAN) precursor using the Electrospinning technique. Stabilization is an important heat treatment process before carbonization. A total of 2 samples were considered for the carbonization process. Electrospun Pure PAN nanofiber mat was used with aluminium foil substrate for the heat treatment process in a tube furnace. The first sample was stabilized at 290 °C temperature at a 2 °C/min heating rate and constant heating for 3 h. The second sample was directly used for carbonization without stabilization. Fibers were carbonized at 500 °C under a nitrogen atmosphere with a dwell time of 1 h. Scanning electron microscopy (SEM) and Fourier transform infrared spectroscopy (FTIR) were used to study the influence on structures and properties of carbon fibers of both samples. To investigate elemental concentration in samples Energy-dispersive X-ray spectroscopy (EDX) was used. EDX results showed 45 % and 60 % carbon atom non stabilized and stabilized carbon nanofibers respectively. An SEM result reveals a drastic fiber diameter reduction in a sample that was not stabilized before carbonization as compared with the sample which was stabilized before the carbonization process. FTIR results showed the complete conversion of C ≡N to C═N at a stabilization temperature of 290 °C. Also, FTIR results reveal that 500 °C temperature is too low for complete carbonization as some peaks are still there after the carbonization. Low temperature carbonization is necessary to avoid the melting of aluminium foil substrate during the carbonization process. Further CNF mat will be peeled off from the substrate and will be used directly as electrode material for electrochemical characterization.

Keywords

Electrospinning; Polyacrylonitrile; Nanofibers; Carbon nanofibers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Volume 65, Part 1, 2022, Pages 106-110

Electrospun 1D TiO_2 nanofibers for dye-sensitized solar cell application

Sunil J. Kadam [a], Krantiveer V. More [b], Sachin S. Chavan [c], Tukaram D. Dongale [d], Sachin M. Shendokar [c]

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https://doi.org/10.1016/j.matpr.2022.05.166

Abstract

In this work, we have synthesized 1-dimensional (1D) TiO_2 nanofibers (NFs) by using the electrospinning technique for dye-sensitized solar cells (DSSCs) application. The synthesized 1D-TiO_2 NFs were characterized by using UV–Visible spectroscopy, Fourier-transform infrared spectroscopy, X-ray diffraction, field emission scanning electron microscope and energy dispersive spectroscopy techniques. The optimized1D-TiO_2 NFs were used to develop DSSCs using solution-processable techniques. In this work, we have explored the effect of annealing temperature (450 °C and 500 °C) and dyes (N719 and N350) on the solar cell properties. Our results asserted that the low-temperature annealing process provides good efficiency and N719 dye performs better than N350 dye. In addition to this, the diameter of the TiO_2 NFs was varied to investigates its effect on different solar cell properties. The present investigation is helpful to optimize the NFs based DSSCs.

Previous article in issue Next article in issue

Keywords

TiO_2; Dye synthesized solar cell; Electrospinning; 1D Nanofibers; N719; N350


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Binder-Free Synthesis of Nanostructured Amorphous Cobalt Phosphate for Resistive Memory and Artificial Synaptic Device Applications

Pranav K. Katkar, Navnath S. Padalkar, Dhananjay D. Kumbhar, Aravind H. Patil, Santosh S. Sutar, Sunil J. Kadam, Rajanish K. Kamat, Seung-Hyun Chun, and Tukaram D. Dongale*

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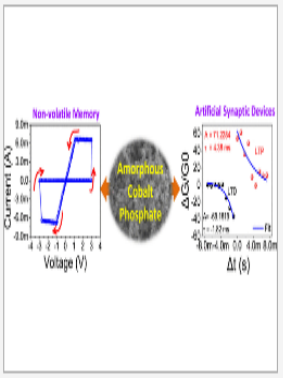
ACS Applied Electronic Materials

Abstract

The rise of artificial intelligence and machine learning demands versatile electronic devices for memory and brain-inspired computing applications. The electronic materials are the backbones of these applications. Considering this, a functional $Co_3(PO_4)_2$ nanomaterial was synthesized for resistive memory and neuromorphic computing applications. The synthesized nanomaterial was well characterized by using X-ray diffraction, Fourier transform infrared spectroscopy, field emission-scanning electron microscopy, and X-ray photoelectron spectroscopy. The fabricated $Ag/Co_3(PO_4)_2/ITO$ device shows bipolar resistive switching and memristive properties. The SET and RESET voltages were analyzed by using different statistical measures, and their distribution was studied by using the Weibull technique. The results suggested that the SET voltages were more uniformly distributed than the RESET voltage. The switching nonlinearity was modeled and predicted by using Holt's exponential smoothing-based statistical time series analysis method. In the case of nonvolatile memory tests, the device shows good endurance (10^3 cycles) and memory retention (3×10^4 s) with excellent memory window (1.7×10^3) properties. Moreover, the device can mimic the potentiation–depression and spike-timing-dependent plasticity-based Hebbian learning rules, suggesting $Co_3(PO_4)_2$ is a potential nanomaterial for the fabrication of artificial synapse. The detailed analysis of electrical results suggested that the space-charge-limited current-based charge transport was responsible for the device conduction, whereas the formation and rupture of conductive filament(s) were responsible for the resistive switching in the $Ag/Co_3(PO_4)_2/ITO$ memristive device. The results of the present investigation suggested that the $Co_3(PO_4)_2$ nanomaterial is a potential candidate for resistive memory and brain-inspired computing applications



KEYWORDS: cobalt phosphate, resistive switching, memristive device, time series analysis, synaptic device, neuromorphic computing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Article

Analysis and Prediction of Hydrothermally Synthesized ZnO-Based Dye-Sensitized Solar Cell Properties Using Statistical and Machine-Learning Techniques

Santosh S. Sutar, Suvarna M. Patil, Sunil J. Kadam, Rajanish K. Kamat, Deok-kee Kim,* and Tukaram D. Dongale*

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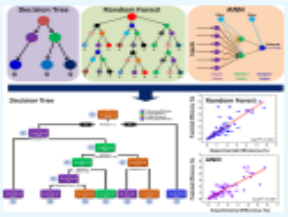
ABSTRACT: Dye-sensitized solar cells (DSSCs) are one of the most versatile and low-cost solar cells. However, DSSCs are prone to low power conversion efficiency (PCE) compared to their counterparts, owing to their different synthesis parameters and process conditions. Therefore, designing efficient DSSCs and identifying the parameters that control the PCE of DSSCs are a critical tasks. We have collected data from hydrothermally synthesized DSSCs in the present work, published from 2005 to 2020. In line with publishing trends in the said period, we evaluate ZnO as a popular photoactive material for DSSC applications. We further analyzed the performance of hydrothermally synthesized ZnO DSSCs using different statistical techniques and provided some significant insights. We further applied the machine-learning technique with a decision tree algorithm to understand and discover the possible set of rules and heuristics that govern the morphology of the hydrothermally grown ZnO. In addition, we also employed supervised and unsupervised machine-learning models using conventional decision trees and classification and regression trees, respectively, to identify the dependence of the PCE of ZnO DSSCs on the different synthesis parameters. The reported work also evidences the PCE predictions of the ZnO DSSCs by using random forest and artificial neural network algorithms. The results substantiate that the random forest and artificial neural network algorithms successfully predict the PCE of the ZnO DSSCs with reasonable accuracy. Thus, we present a novel approach of applying statistical analysis and machine-learning algorithms to understand, discover, and predict the performance of DSSCs. We recommend extending the said know-how to other solar cells to identify rules and heuristics and experimentally realize highly efficient solar cells in shrinking manufacturing windows with a cost-effective approach.



1. INTRODUCTION

Machine learning (ML) has made a remarkable impact on the materials science and energy sector by discovering the hidden patterns and heuristics of many materials and devices at lower computational cost and time.[1−3] The new insights provided by the ML models are scientifically and technologically relevant, and they help accelerate the discovery of new materials.[4] For instance, the fabrication of highly efficient solar cells requires in-depth knowledge of physical processes and insights into the experimental procedures. Many variables in the above said experimental procedures compete to have a trade-off affecting the device's performance. Therefore, it is an arduous task for conventional modeling and simulation methods to discover new materials and predict the device properties.[5]

On the other hand, ML uses the black-box approach to discover properties and correlations between physical and chemical parameters which are otherwise unattainable by traditional methods.[6] In ML-assisted solar energy research, most of the time, the data set is created by using density functional theory calculations. However, this approach has very high computational costs, poor scaling, and a homogeneous data set, limiting its effectiveness for general purpose applications.[7] Considering this, designing an ML model based on experimentally available data can become an effective solution, and such approaches have paved the way to outstanding results.[8,9] Dye-sensitized solar cells (DSSCs), the subject for investigation in this research, are considered low-cost and promising solutions to overcome the current energy-related issues.[10] In recent years, the photovoltaic research community has been looking forward to providing highly efficient solar cells based on the DSSC principle. Many researchers are trying hard to achieve this goal. The popularity of DSSCs lies in its low-cost solution-processable synthesis techniques, simple device design, and scale-up possibilities.[11,12] The Scopus database reveals more

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Intrusion Detection System based on Energy Efficient Dynamic Clustering in a Heterogeneous Environment of Wireless Sensor Networks (WSNs)

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Abstract

Wireless sensor networks (WSNs) has widely used in the practical-world applications, including the identification of the military targets, the monitoring of forest fires, the detection of medical and/or scientific targets, and, most importantly, in our everyday lives at home. However, because WSNs use broadcast transmission as their communication method and therefore lacks tamper resistance, adversaries can easily compromise WSNs. As a result, a hacker has the ability to listen in on all communication, replay past texts, insert suspensive data groups, and the compromised nodes. The two main security vulnerabilities that affect sensor nodes most frequently are the node and authentication of node compromise. This study proposes a heterogeneous structure for WSN intrusion detection and node capture. Using a cutting-edge method that combines a signature- based and anomaly-oriented methods through the neural network of multi-layer perceptron (MLP) classification through the clustering context, this framework effectively finds the recorded nodes. Additionally, the suggested architecture is effective at a very reasonable level of computation and cost of communication, it could provide a security barrier for actual application of WSN.

Keywords: WSN, intrusion detection, multi-layer perceptron, wireless sensor networks, heterogeneous

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Introduction

The wireless sensor network (WSN) is a system made up of several low in cost, constrained in resource- sensor nodes that collect crucial environmental data and transfer to a node of sink which acts as a main passage to another network or as a point of access for the human interaction. WSN is the field that is expanding quickly as new technologies become available


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Machine Learning Tool Development And Use In Biological Information Decoding

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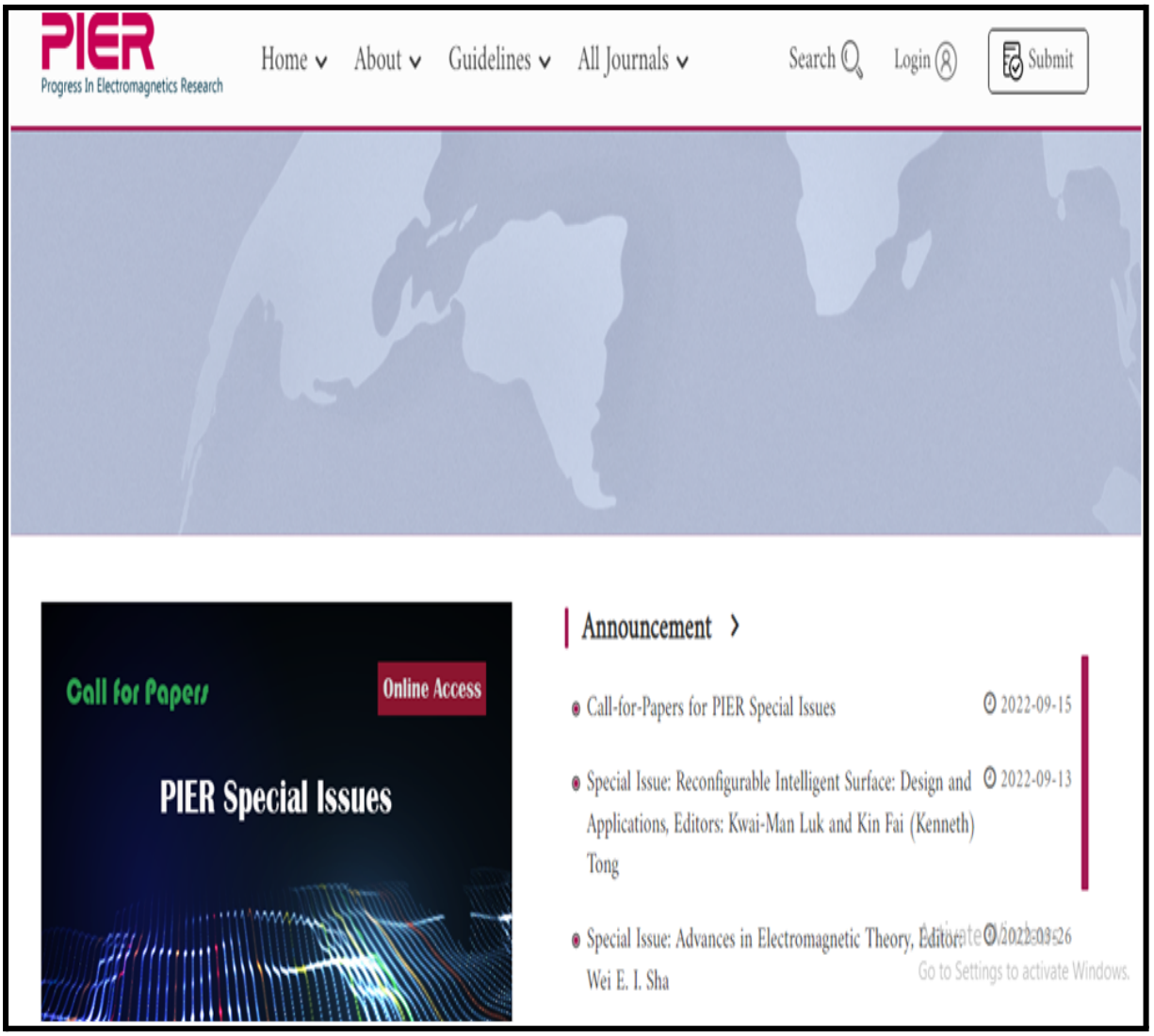
Abstract

DNA, RNA, and proteins are the main molecules of life, and the varied roles that proteins play determine the phenotypes of living organisms. Since proteins are polymers made up of amino acid molecules, it is crucial to understand their many roles and features in order to comprehend life at the molecular level. Complete protein sequences for many species have been obtained thanks to recent developments in high throughput deep sequencing methods. Experimental approaches to functionally annotating proteins are time-consuming, labor-intensive, and expensive. As a result, only a fraction of the total sequenced proteins have been annotated experimentally. Instead of using experiments to determine how proteins should be categorised, we may utilise machine learning techniques to train computer models using annotated proteins and then use those models to classify freshly sequenced proteins into their respective categories. Significant biological knowledge and computing ability are necessary for using machine learning. Machine learning algorithms, on the other hand, are meant to construct models without any human intervention. However, this is true only for numerical training data sets, since the vast majority of biological data are textual or otherwise qualitative in nature. Specific algorithms are needed to transform biological data into machine readable forms. Therefore, experimentalists rely on computer professionals to create models using machine learning for their data. Due to the need for assistance from computer professionals, the time it takes to generate hypotheses and uncover new information has increased.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Design of Tri-Band Textile Fractal Antenna Using Three Different Substrate Materials for Wi-Fi Applications

Asit Kittur* **and Loganathan Balaji**

Abstract—The purpose of this study is to embed an antenna on very thin textile materials. A rectangular Fractal Antenna is chosen for this application. This antenna radiates for three different frequencies viz. 2.4 GHz, 4.2 GHz, and 5.9 GHz. The substrate materials used for the three antennas are Poly Viscous, Poly Cotton, and Linen which are easily available. Instead of using traditional method applying copper plate or copper layer on substrate material, a simple process of pasting carbon conductive ink on substrate materials is used. On each textile antenna above mentioned frequencies are radiated. Performance parameters of all three antennas are simulated and matched with practical results. The optimum antenna having the best result is used for Wi-Fi applications.

1. INTRODUCTION

Wireless communication took tremendous gain in world wars. Today wireless communication is exploited in clinical practice, space science, etc.

Antenna remains a basic building block for wireless technology from last 30 years. For transmitting and receiving electromagnetic signals in wireless communication, antennas are extensively used. Now antenna quality depends upon how well it can receive the electromagnetic waves. Comparatively large aperture antenna detects better signals than smaller aperture. But larger aperture antenna has disadvantage of having complex and bulky engineering. The way to overcome this challenge is to implement low profile antenna.

Since 1970 wearable technology has increased its application. Many wearable antennas have been used for the collection of data in the medical field or communicating data with other devices. It may be convenient to integrate wearable directly into clothing instead of attaching them on the body [1–4].

To reduce the cost related to health-care, telemedicine is one of the best options used for elderly people [5]. The combination of information technology and wearable sensors can assist elderly people to live in their home rather than living in expensive hospitals. The sensors are placed on the body of the patient for transmitting signals wirelessly for remote monitor to observe human physiological signals [6–8]. Zig-bee & GSM technologies are used for transmission and reception of signals.

Dual-band textile printed slot antenna with partial ground plane on jeans substrate is used for Wi-MAX (3.25 GHz–3.85 GHz), WLAN (5.15 GHz–5.35 GHz), and X-Band (8 GHz–12 GHz). The ultra-wideband (UWB) uses very low energy for short range. It can also have better battery life. In this application, the antenna is used as a Logo [9].

Textile antenna with dual-band Patch-Loop structure is developed to obtain two wide operating bands. Neoprene fabric having permittivity 1.5 is used as a substrate, and the antenna achieves a gain of 4.21 dBi at 2.58 GHz with a bandwidth of 15.9 GHz. For a gain of 6.45 dBi at 5.34 GHz frequency, the antenna achieves a bandwidth of 11.4 GHz. Here the patch is designed to resonate at 5.4 GHz, and a slot is designed for 2.5 GHz [10].

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The authors are with Veltech Rangarajan Dr. Sakunthala R & D Institute of Science & Technology, Chennai, India.


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Enhanced Diagnostic Methods for Identifying Anomalies in Imaging of Skin Lesions

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ABSTRACT- There are several types of skin diseases, to protect and keep them healthy from these ailments; an effective and efficient diagnosis is required. One of the domains used by medical experts to diagnose severe class of skin disease is medical imaging. It is non-invasive way of diagnosis in which screen of the abnormal region performs first and then the dermatologist examines the subcutaneous structure and forecasts the severity of the lesion. One severe class of lesions is skin cancer, which is categorized as melanoma and non-melanoma. Most of the research has been performed on melanoma as yet and non-melanoma cancer diagnosis is still an untouched area. The cure rate of skin cancer is high, when diagnosed at an earlier stage. The proposed approach is applicable to gray scale or single channel images and the resultant output is binary images, and this can be compared easily with the available mask in the benchmark dataset. In addition to this, the APCNN proposal minimizes the requirement of post processing step for lesion boundary detection.

Keywords: Skin cancer, Boundary, Classification, Segmentation, Invasive and Medical Diagnosis.

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1. INTRODUCTION

The largest organ in the body, the skin, is immediately exposed to the environment, making it susceptible to diseases, which are among the most well-known conditions affecting people. These ailments can abruptly grow as compared to surrounding skin and develop a lesion. There are two categories of skin lesion which exist in the human body as primary and secondary. Primary skin lesions are present at birth or developed over a person's lifespan whereas secondary lesions are the result of manipulation in primary lesions. As an example, itching in the mole by continuous scratching, leads to a secondary lesion [1].

There are various kinds of primary or secondary skin lesions occurring in different parts of the human body and few of them are severe. The most severe classes of skin lesion are skin cancers. These are the most prevalent forms of cancer disease, particularly among Caucasian descendants and people with light skin. This cancer is visible on the skin and is curable when it is detected at an early stage [2].

The advent of noninvasive approaches give dramatic boost in clinical diagnostic ability and help to detect skin lesion more accurately. The global adoption of this technology promotes imaging methods for skin lesion screening. Most prevalent class of cancer in white color people is melanoma but in wheat or dark color people SCC commonly occur. According to cancer society statistics, the most prominent class of cancer is melanoma and their cases have increased 30 times in last 88 years. Out of them, more than 1 million cases of skin cancers are diagnosed in the US only [3].

It is approximated that around 9,500 individuals in the U.S. are found to have skin cancer every day. Not only in the U.S., there are other countries in the world, where the cases of skin cancers are promptly identified due to certain confluence factors such as skin type, location, lifestyle and up to some extent for gene predisposition. Since cancer death cases can be momentously decreased if they are detected and taken care of during their early stages, it is of quite importance to empower research by developing strategies for early detection of cancer non-


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Intrusion Detection System based on Energy Efficient Dynamic Clustering in a Heterogeneous Environment of Wireless Sensor Networks (WSNs)

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Abstract

Wireless sensor networks (WSNs) has widely used in the practical-world applications, including the identification of the military targets, the monitoring of forest fires, the detection of medical and/or scientific targets, and, most importantly, in our everyday lives at home. However, because WSNs use broadcast transmission as their communication method and therefore lacks tamper resistance, adversaries can easily compromise WSNs. As a result, a hacker has the ability to listen in on all communication, replay past texts, insert suspensive data groups, and the compromised nodes. The two main security vulnerabilities that affect sensor nodes most frequently are the node and authentication of node compromise. This study proposes a heterogeneous structure for WSN intrusion detection and node capture. Using a cutting-edge method that combines a signature- based and anomaly-oriented methods through the neural network of multi-layer perceptron (MLP) classification through the clustering context, this framework effectively finds the recorded nodes. Additionally, the suggested architecture is effective at a very reasonable level of computation and cost of communication, it could provide a security barrier for actual application of WSN.

Keywords: WSN, intrusion detection, multi-layer perceptron, wireless sensor networks, heterogeneous

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Introduction

The wireless sensor network (WSN) is a system made up of several low in cost, constrained in resource- sensor nodes that collect crucial environmental data and transfer to a node of sink which acts as a main passage to another network or as a point of access for the human interaction. WSN is the field that is expanding quickly as new technologies become available

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A STUDY ON BATTERY MANAGEMENT SYSTEM AND CHARGING INFRASTRUCTURE FOR ELECTRIC VEHICLE DEVELOPMENT

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ABSTRACT

Batteries are the main source of electricity in electric cars. After a few kilometres of driving, the battery in electric vehicles needs recharging. As a result, the New Battery Management System has been proposed. An in-depth assessment of this innovative and fulfilling solution tobattery problems in electric cars is presented in this detailed review and investigation. Road and off-road vehicle manufacturers have developed a wide range of electric drives because ofstrict laws like CO2 limitations and the desire to have pollution-free transportation. In addition to numerous hybrid propulsion methods, battery and fuel cell electric ideas are also available. Diverse applications call for different system configurations, each with its own set of benefits and drawbacks. Therefore, battery technologies play a significant part in meeting the varied criteria of the vehicle designs exhibited. Both charging and discharging are taking place concurrently. As soon as one half is totally depleted, the other half is used and the other half isstored for charging. With this management, we do not need external charging and the car is self-charging, thus there will be no space issue because we are not utilising two separate batteries. These battery management systems are examined in depth in this research, so that their advantages may be assessed.

Keywords: Electric Road vehicles, Hybrid electric vehicles, Fuel cell, Battery, Management

INTRODUCTION

Primary and secondary batteries are the most common types of batteries. Non-rechargeable primary batteries can only be drained once and are not able to be recharged. "Dry cells" are another name for these sorts of batteries. A secondary battery can be recharged to its original state after being discharged. Rechargeable batteries are another name for this sort of battery. High energy density, high power density, extended cycle life for little maintenance, and cheap cost for greater market adoption are all necessary components of a rechargeable battery system in electric vehicles and plug-in hybrid electric vehicles (PHEVs). Secondary batteries meet most of the above-mentioned characteristics, hence they are commonly employed in electric vehicles. Over the course of the last century, secondary batteries have been developed. There are already a wide variety of secondary batteries on the market. These include lead-acid, nickel- cadmium, nickel-metal hydride (NiMH), and lithium-ion (Li-ion) batteries.

To reach specified driving lengths, electric vehicles need battery systems that can store enough energy and generate enough peak power to achieve a certain acceleration performance. Electrochemistry of secondary batteries, which are the building blocks of battery systems, is first introduced in order to better comprehend how EV batteries work. Afterwards, we go into the four types of secondary batteries' origins, working principles, performance, and uses. Usingan electrochemical process, a battery cell converts chemical energy into electrical energy and vice versa an electrochemical battery cell schematically. In order to power an external load, thecell uses two collectors for positive and negative current: one on the negative electrode and oneon the

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International Journal of Mechanical Engineering

A RESEARCH ON CRITICAL COMPONENTS OF ELECTRIC VEHICLE AND THE IMPACT OF CIRCUIT FAILURE

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ABSTRACT

It is expected that this means of transportation would soon be replaced by vehicles powered by combustion engines. Preamplifier and power stage amplifiers govern the flow of power from the battery to the motor, with numerous sensors monitoring the system's functioning, in a motorspeed controller. In addition to the basic EV components, each features a number of technologies that are presently in use or that might be significant in the future. Electric vehicles (EVs) can have a substantial influence on the environment, the electricity grid, and other connected areas. Electric vehicles might pose a serious threat to the stability of the current power grid, but with adequate management and coordination EVs could be a key contributor to the successful implementation of the smart grid idea. The battery pack's 300 V direct current powers the controller in this vehicle. As a result, the motor is supplied with a maximum 240 Vthree-phase alternating current. The batteries' massive transistors allow them to swiftly turn onand off the voltage. The connection from the accelerator pedal connects to two potentiometers when you press the pedal. Using potentiometers, the controller is able to determine how muchpower to supply the motor. As a result, the primary objective of this article is to examine all ofthe relevant data on electric vehicle layouts and electrical machines as well as charging and optimization methods.

Keywords: Circuit, components, electric, vehicle, battery, power, voltage, current, electricity grid

INTRODUCTION

You can learn a lot about magnets, electromagnets, and electricity in general if you understand how a motor works. Learn how electric motors work in this paper. The electric motor is at the very core of any electric vehicle. One of the most efficient mechanical devices on the globe is an electric motor. Electric motors produce no harmful emissions, unlike internal combustion engines. An electric motor is made up of three moving elements. Electric motors outlive internal combustion engines every day of the week, even if they have three sections. There are two rotors and two end bearings in this machine. Just one of the many reasons for the growing acceptance of electric vehicles and the push to encourage individuals to make their own. Regardless of whether you hire someone to create your EV or build it yourself, your EV will save the globe. Because of the intrinsic qualities of its electric motor, a high-performance, fun-to-drive EV will provide years of low-maintenance driving at a little expense.

This paper goal is to help you choose the best electric motor for your EV conversion or construction, and to point you in the right direction. Electric motor basics and useful equationsare covered in this paper in order to achieve these goals. You will also learn about the various types of electric motors and their advantages and disadvantages for EVs, as well as the best electric motor for your EV conversion or build today and its characteristics. Finally, you will learn about which specific electrical engine to closely monitor and research for future EV conversions or builds. Inherently, electric motors are powerful. There are very few traction motors that do not provide near-peak torque at a speed of zero revolutions per minute. Becauseof this, electric traction motors have powered our subways and diesel-electric trains for so long.There is no need to wait for the


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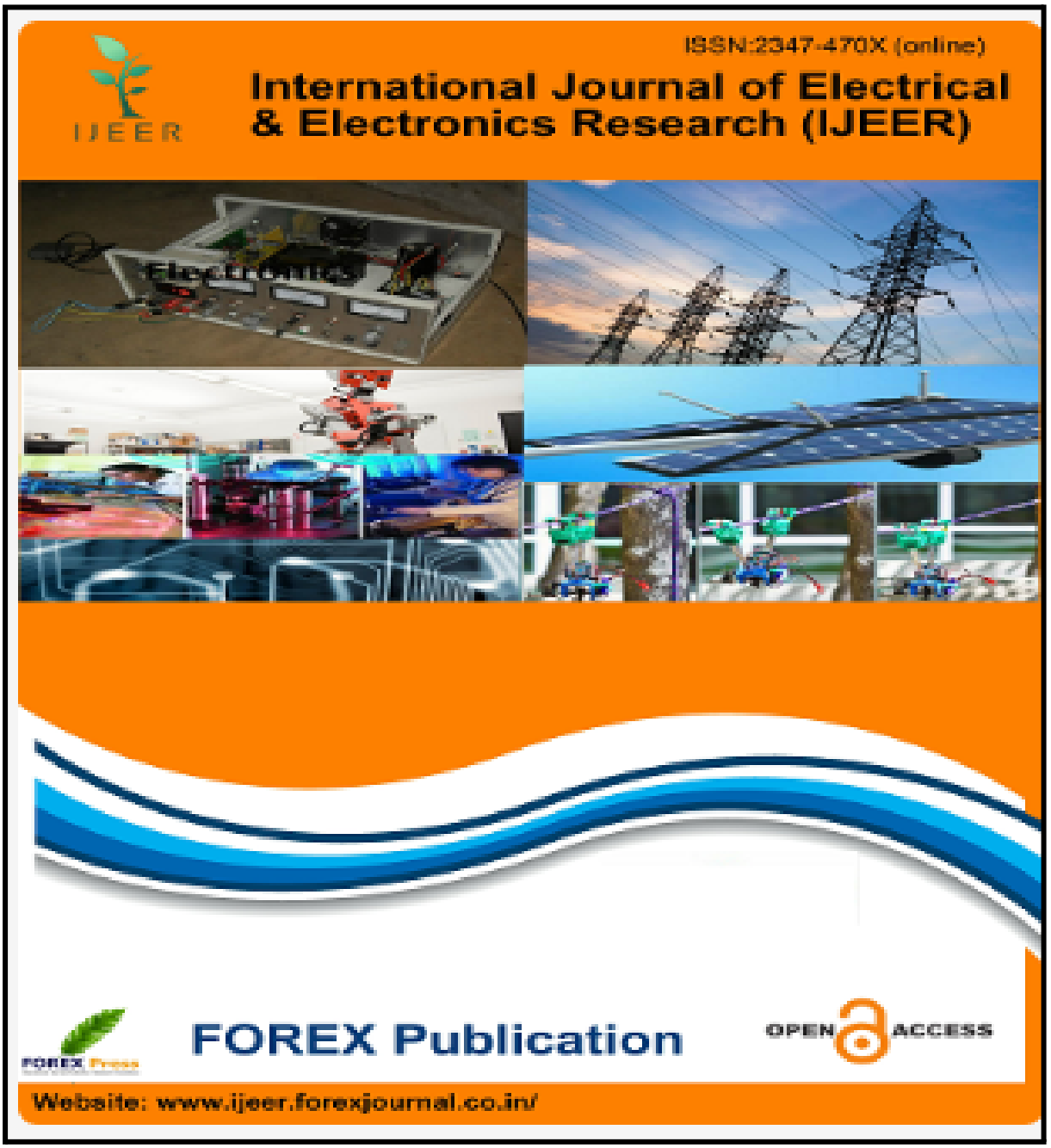
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A Morphological Change in Leaves-Based Image Processing Approach for Detecting Plant Diseases

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ABSTRACT- In recent years, rice production is mostly affected by rice plant leaf diseases due to the unawareness of suitable management strategies. The paddy leaves are regularly impacted by Brown spot and Bacterial blight diseases, which result in creating major loss to the farm owners. The naked-eye observation is used by the farmer to analyse the condition of paddy leaves, but, it takes more time and the accuracy of it is based on the observer. The naked-eye observation is generally difficult and it has a high possibility of human error. To overcome these drawbacks, a fast and suitable recognition system is required. Thus, appropriate methodologies are required for the determination of diseases in paddy leaf. The use of image processing is seen as a non-intrusive method that offers farmers a precise, economical, and trustworthy solution. Therefore, this research work, focused to provide the fast recognition system to detect leaf diseases in paddy crops.

Keywords: Morphological, Leaves, Image, Segmentation, Plant Diseases, Brown Spot.

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1. INTRODUCTION

The plant disease affects the plant physiological function and creates severe destruction to the field. Further, the plant diseases may propagate to other plants through several means. The occurrence of each disease in the plant is found by its symptoms, which may present in a variety of parts of the crops, such as roots, fruits, leaves, flowers and stem. Disease in plants can create unnecessary changes in appearance, size of fruits, leaves, flowers and stem.

The disease in plant leads to the reduction of crop production by affecting the quantity as well as eminence of the yield. The predominant food crop of Asian countries is rice. This is the major food source for south Indian people too. Many techniques are developed to increase the crop yield to satisfy the huge need for rice crops [1]. This food grain is grown in huge fields of paddy and hence the spread of any disease would severely affect the productivity.

Such harmful diseases infect the plant due to several biological reasons, which are discussed below.

Bacterial Diseases: If the plant diseases occur due to bacteria, it is referred to as bacterial disease. Bacterial leaf spot is known as the plant disease which is generally caused by bacterial infection. This bacterial leaf spot mostly affects the young leaves and the affected leaves look like dark, greasy, twisted, water-soaked - appearing lesions.

Viral Diseases: Both lives of plant and production are affected by viral-based diseases. In viral diseases, the symptoms prominently occur on the plant leaves, but, several viruses may affect the other parts of the plant such as roots, leaves and fruits [2]. The identification of symptoms of viral diseases is difficult compared to the symptoms of bacterial diseases. As a result of viral diseases, the growth of plants is affected, likewise, the leaves may appear as curled and wrinkled.

Fungal Diseases: Fungal disease can propagate from one plant to another plant by factors like water and wind. It affects the seed, yield and soil. The fungal disease affected plant appears as water-soaked, gray-green spots. After the formation of gray-green spots, white fungal is developed under the leaf of plant.

The productivity in agriculture is significantly affected every year because of the diseases, invasion of pathogens and climatic


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Gurmeet Singh / An extraordinary class of asymptotic analytical functions with coefficient inequality

An extraordinary class of asymptotic analytical functions with coefficient inequality

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Abstract –In this paper, we elucidatecoefficient inequality proved by Fekete and Szegö[5] in 1933 by using the analytic functions of the form $f(z) = z + \sum_{k=2}^{\infty} a_k z^k$ for asubclass of a class of regular functions.

2010 *Mathematics Subject Classification*: 30C45, 30C50.

Keywords - Principle of subordination, Fekete – Szegö Inequality, Starlike functions, Boudedanalytic functions.

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1. Introduction – In this paper, we will be dealing with geometric function theory, abranch of complex analysis dealing with the regular functions geometrically. The mainstay of this theory is Riemann Mapping Theorem which was proved in 19th century. It originated its roots in the work of prodigious mathematician Koebe [10] in 1907, who stated that "An analytic function which is univalent has properties of conformal mapping i.e. angle preserving property". From this theorem, Bieberbach conjecture was substantiated. This was given by L. Bieberbach[2] in 1916 but proved in conclusion by Louis De Branges [3] in 1985 and while attempting this conjecture, an equality arosecalled Fekete Szegö Inequality and was given by Fekete and Szegö [5].

The inequality which is for the function $f(z) \in A$ and based on Bieberbach conjecture, is named as Fekete Szegö Inequality, which states that if $f(z)$ is a function of type

$$f(z) = z + \sum_{k=2}^{\infty} a_k z^k$$

which is univalent in E, then

$$|a_3 - \mu a_2^2| \leq \begin{cases} 3 - 4\mu \ if \ \mu \leq 0 \\ 1 + 2\,exp\left(\frac{-2\mu}{1-\mu}\right) \ if \ 0 \leq \mu \leq 1 \\ 4\mu - 3 \ if \ \mu \geq 1 \end{cases}$$

This is an inequality which is related to univalent analytic functions [8], [16], [18] – [43] and gives the necessary condition to map the unit disk of a complex plane injectively to the complex plane. It gives the relation between second and third coefficient of univalent analytic function.


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Research Article

Flax- and Graphene-Reinforced Natural Fiber Nanocomposites under Cryogenic Environment for Constructional Applications

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Mostly at the micro- and nanoscales, efforts were made to produce innovative thermoplastic nanocomposite materials. These composites were reinforced with natural fibres and artificial additives with improved mechanical characteristics. This research entails the creation of a novel nanocomposite material made up of unsaturated polyester resin, graphite at the nanoscale, and flax fibres at the microscale. Flax fibres make up 4, 8, and 12% of the binding matrix's weight, respectively. A constant quantity of nanoparticles equal to 4 wt% of the binding matrix is used. In order to stick the graphene to natural fibres, an appropriate surface alteration approach is needed, and this work will focus on the plasma technique of interface adherence. Fibres were employed as a reinforcement with polyester to create a nanocomposite that improved adherence between the fillers while also retaining the matrix alkalisation. In order to assess interferential adherence and fibre distribution homogeneity in the matrix system, the composite was made up of hand lay-up technique. The manufactured composite was engrossed into fluid N_2 at -196°C. A SEM was utilized to undertake treated and untreated specimens for spectroscopy analyses. Mechanical possessions like tension and flexural were accomplished. In comparison to previous tested doses, the 5 percent alkali-treated flax incorporating graphite has shown promising outcomes than other samples.

1. Introduction

Awareness of environmental issues and social response is raised, as improved pollution regulations and inefficient oil consumption, prompting consideration of ecofriendly products. Organic fibre is one of the most ecologically compost resources on the market, exceeding man-made materials in a number of ways. As per a recent industry assessment, the global market for organic fibre-based material is expected to reach $3.9 billion by 2023. The global trend in the NFPC industry, as per current estimates, will continue to develop fast [1]. A natural fibre-


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Intrusion Detection System based on Energy Efficient Dynamic Clustering in a Heterogeneous Environment of Wireless Sensor Networks (WSNs)

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Abstract

Wireless sensor networks (WSNs) has widely used in the practical-world applications, including the identification of the military targets, the monitoring of forest fires, the detection of medical and/or scientific targets, and, most importantly, in our everyday lives at home. However, because WSNs use broadcast transmission as their communication method and therefore lacks tamper resistance, adversaries can easily compromise WSNs. As a result, a hacker has the ability to listen in on all communication, replay past texts, insert suspensive data groups, and the compromised nodes. The two main security vulnerabilities that affect sensor nodes most frequently are the node and authentication of node compromise. This study proposes a heterogeneous structure for WSN intrusion detection and node capture. Using a cutting-edge method that combines a signature- based and anomaly-oriented methods through the neural network of multi-layer perceptron (MLP) classification through the clustering context, this framework effectively finds the recorded nodes. Additionally, the suggested architecture is effective at a very reasonable level of computation and cost of communication, it could provide a security barrier for actual application of WSN.

Keywords: WSN, intrusion detection, multi-layer perceptron, wireless sensor networks, heterogeneous

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Introduction

The wireless sensor network (WSN) is a system made up of several low in cost, constrained in resource- sensor nodes that collect crucial environmental data and transfer to a node of sink which acts as a main passage to another network or as a point of access for the human interaction. WSN is the field that is expanding quickly as new technologies become available


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Novel Predictive Control and Monitoring System based on IoT for Evaluating Industrial Safety Measures

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ABSTRACT- In this paper, the Accident Reduction Model (ARM) technique has been used to analyze different critical criteria in various industries. This ARM technique is used to determine the conclusions of the decision-making process. Valid data is obtained in the structure of the IoT with proper and consistent and useful information. The network address utility allows efficient sensor data. The necessary configuration procedure effectively monitors relevant sensor boundary values. Finally, we have ensured that the system will be able to provide dynamic performance in an IoT-based use of low-cost estimates and lower execution time.

Keywords: IoT, Safety System, Attributes Sensor, Industry, Mean, and Standard Deviation.

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1. INTRODUCTION

EHS prevents the Hazard or damage caused by the possibility of an event of Risk or disaster. There is no possibility of injury/ damage/accident occurring by injuries, Incidents, Near miss, actual infections, disability, or even Fatal. They consist of Environmental, Health, and Safety (EHS) departments and responsible safety officer who is technically and professionally qualified. But in the textile and the foundry, they employ only less number of safety professionals for their operation [1]. Hence, they don't have any separate department and authority for EHS issues as per the statutory requirements. The accidents due to machinery form a sizeable amount of injuries and even permanent disablement. Even a highly skilled and more experienced person may be injured by hazardous machinery [2]. It is impossible for a human always to be on 100% alertness. A well designed and carefully maintained machine will make the operator to concentrate on their work without any fear of accident and incident.

The production will automatically be more with better results. In specific, heavy engineering (85 %), automobile (80 %), manufacturing (65 %), foundry (50 %) and textile (40 %) industry provide fencing in areas of moving and rotating parts of running machinery. Heavy engineering, automobile, and manufacturing industries provide fencing as per the applicable standards and regulations because they purchase or fix in the machines which are of the best quality, providing in vendor units [3]. Hence, they provide fencing at the design stage itself. In the case of foundry and textiles, they have not provided fencing to all machineries as they are handling only a smaller number of machines. Hence, they do not need fencing for all machines. Hence, they look after the fencing and measures to a minimum level while compared to other industries. Revolving parts protection is one of the engineering control measures of protecting the employees from the movable parts and running parts of the machine. Hence, all the revolving parts do not require frequent adjustment while in motion, which are completely encased in the industries, as mentioned earlier [4]. But, in the case of the textile industry (65 %) and foundry (65 %), effective measures should be taken to provide the revolving machine protection at the design stage itself. The revolving machine should be fixed with a notice indicating the safe working peripheral speed. Overall, about 79 % of Indian industries are provided with the notice of safe work speed. In the heavy engineering (95 %) and automobile (90 %) industries, the safe work speed practices are well followed as per the standard. The manufacturing (75 %), foundry (65 %), and the

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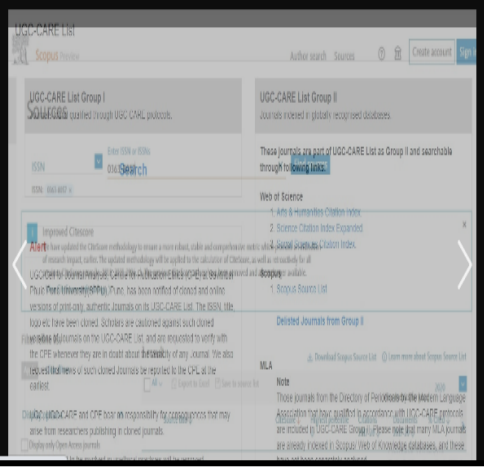

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Development of Laboratory Performance Monitoring and Evaluation System Using Machine Learning

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Abstract

The laboratory performance monitoring and evaluation of performance system deals with the idea of smart labs with automated access utilizing IOT for automating the process of switching ON the appliances providing smartness and automation to our computer labs. It uses technology for image acquisition in Raspberry Pi based embedded systems. The RPi (Raspberry pi) controls the camera to capture images. The camera captures the facial picture and RPi processes the image to the service which recognizes the face in the image by comparing it with the images which are stored in the database. If the picture is found in the database node is assigned to the person, the node and nearby fan and light are provided power. Nodes will be notified by voice announcement. After successful comparison the attendance is marked into database table for that student for subject.

Keywords: **Internet of Things, Local Binary Patterns Histogram, Raspberry Pi3, Machine Learning**

Introduction

Automation is any technology used to carry out a process or procedure with at least human assistance. Need of automation increasing day by day. The concept of facial recognition to gain access to the node in a lab is an idea which is used to make our labs smart and automated. A facial recognition system is a system that captures facial images and verifies the person's identity with a digital camera. Face pictures can be captured from a separation without touching the individual being recognized. Face Recognition is normally utilized as a part of security frameworks and can be contrasted with different biometrics. It has additionally turned out to be mainstream as a commercial recognizable proof.

Proposed system also uses cloud computing to store the database of images and for facial recognition. Cloud computing makes the system scalable. Cloud having more storage capacity than SD card. Cloud computing allows multiple RPi system access same database stored in cloud, instead of creating different database for each RPi Systems in different Lab.

Machine learning (ML) and artificial intelligence (AI) are closely related. AI becomes feasible via ML. Through ML, computer systems learn to perform tasks such as classification, clustering, predictions, etc. To archive the learning process, we train the system using various algorithms and statistical models and analyze sample data. The sample data are usually characterized by measurable


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Identification, classification, and grading of plant leaf diseases using CBIR and K-means clustering

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ABSTRACT

Plant disease management involves the identification, classification, and grading of plant disease according to disease severity. It is not only a challenging task that involves human resources but also includes expertization and timely decisions to reduce the threat of reduced production and high spread of disease. The efficiency of recently developed systems depends on the selection of image features and accuracy in the segmentation of diseased portions. The research in this paper presents Content-Based Image Retrieval (CBIR) system implemented for the identification and classification of leaf diseases. The system is further upgraded with the extraction of diseased portion of the leaf using K-means clustering technique for grading the disease severity. The retrieval system is realized using of color, shape, and texture features of the leaf. It is observed that the proposed system performs the tasks of disease identification, classification, and severity grading accurately and consistently

Keywords: CBIR, Disease, Color, Shape, Texture

I. INTRODUCTION

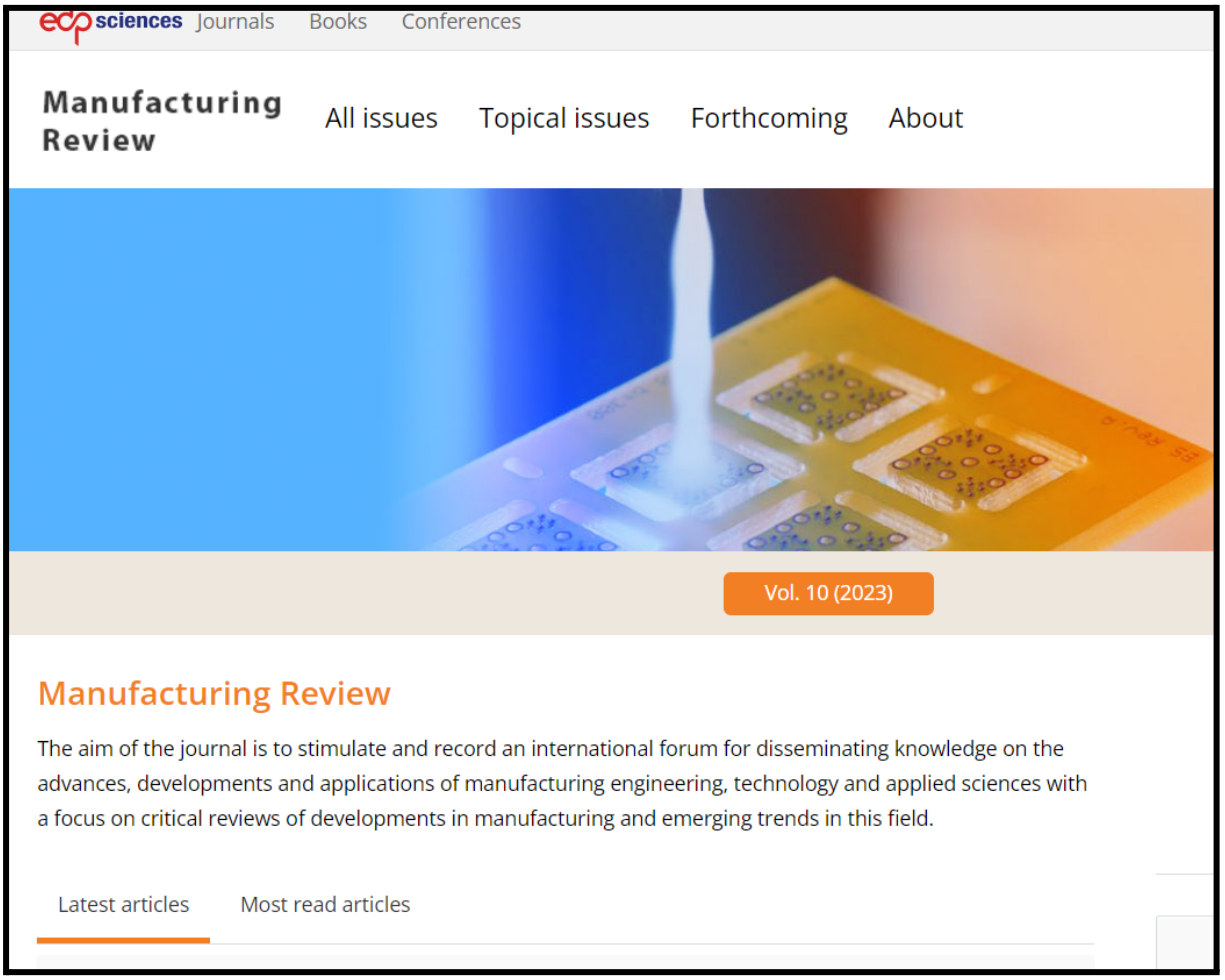
Most of the population in agricultural countries depends on agriculture for livelihood. Because of suitable atmospheric condition in India agriculturalist have wide range of diversity for cultivation of suitable fruits and vegetable crops. However, the cultivation of these crops for optimum yield and quality produced is highly affected by crop diseases. Hence proper cultivation of crops requires close monitoring especially for the management of diseases that can affect production significantly and subsequently the post-harvest life. Disease is caused by pathogen and its symptoms are observed on plant leaves, stem, flowers and fruits and also produce different traits like change in the size and shape of leaf, stem, flowers and fruits. Identification of the disease in its early stage enables timely cure and control over it. This process requires an expert to identify and classify the disease, describe the method of treatment and protection. Identifying the plant disease is not easy task. It requires experience and knowledge of plants and their diseases. It also requires accuracy in describing the symptoms of plant diseases. Agriculturalist can depend on a system which has experience and knowledge, called an Expert System.

An expert system can be an excellent agriculturalist, agricultural advisor, Electronic or Computerized expert system. An excellent agriculturalist is able to catch the change of the crops in the growing process and they manage the cultivation in proportion to the change. This ability of catching the delicate change in crops is developed in them through the observation and long cultivation experience. It is difficult for them to transmit this knowledge to future generations [1]. If agriculturalists decide to take advice from agricultural expert regarding the treatment of pest /disease/ fruit to their crop/plant in order to increase the crop productivity then he may face following situations [2]:

i) Sometimes agriculturalist has to go long distances for approaching the expert.
ii) Even though they go such distances expert may not be available at that time.
iii) Sometimes, the expert whom a agriculturalist contacts, may not be in a position to advise him with the available information and knowledge.

In these cases seeking the expert advice is very expensive and time consuming.

Since disease diagnosis which includes identification classification and grading is based on visual inspection, it is possible to apply several image processing and computer vision techniques for diagnosis. The systems developed using such techniques are considered as Electronics expert systems. Electronic expert systems help agriculturalists in identifying diseases, making the right decision of treatment and selecting the best one. The expert systems are intelligent computer programs that are capable of offering solutions or advices related to specific problems in given domain, both in a way and at a level comparable to that of human expert in a field. One of the advantages of using Electronic expert systems is its ability to reduce the information that human users need to process, reduce personnel costs and increase throughput. Another advantage of expert system is that it performs tasks more consistently than human experts [3].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Nanofluids, micro-lubrications and machining process optimisations – a review

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Abstract. The lubrication is a prime requirement of metal cutting industries to assure high quality performance. The conventional technique of coolant flow is less economical and eco-friendly. Recently, nano fluids found better cutting fluid in machining due to potential thermal and heat transfer properties. The role of micro-lubrication techniques and process optimization are equally important for improving process performance. The literature review presents the findings of different researchers in the field of nano fluids and micro-lubrication techniques. The experimental studies were focused on better process performance using micro-lubrication techniques, especially nanofluid MQL with optimized process parameters. The thermal conductivity of water based TiO_2 nano fluid shows improvement by 22% in base fluids. The case study discussed which is focused on preparation and characterization of nano fluid, experimental setup and optimization of process parameters by Jaya algorithm. Finally, application of nano fluid, and challenges during nano fluid preparation is identified. The scope of research work is recommended for further study to obtain an economical, eco-friendly manufacturing process.

Keywords: Cutting fluid / machining / modeling / micro-lubrication / optimization

1 Introduction

The recent industries are more concise for economical, eco-friendly and sustainable machining process to achieve quality production. The large amount of heat is generated during machining when tool and work piece contact and it varies from machining to machining type. Setti et al. [1] and Lee et al. [2] discussed the problem of heat generation in the grinding process due to contact of a wheel with workpiece surface for a fraction of seconds during material removal. The chips during grinding are in the form of debris which consumes a large amount of specific grinding energy. The prime requirement is to remove heat quickly from the machine cutting region to avoid further thermal damage to the workpiece and cutting tool. The efficient and better penetration of cutting fluid at the contact zone improves the performance of the machining process. At the same time, optimized process parameters are equally important for a quality product, reducing machining costs and maximizing production rates. Brinksmeier et al. [3] discussed the importance of cutting fluid and its composition for improving process efficiency. The usage of metal working fluid (MWF) varies from machining to machining type and plays a significant role in process improvement. But the excessive use of cutting fluid for machining gives a lot of problems. Li et al. [4] suggested the excess use of metal working fluid (MWF) for machining is uneconomical and creates health issues to workers. In a review paper by Aurich et al. [5], the sustainability of abrasive processes, mainly three dimensions, such as economy, environment and society is discussed. The reason for focusing on abrasive processes is due to a complex material removal mechanism, high specific energy and high use of cutting fluid. Najiha et al. [6] explained the importance and necessity of process sustainability from a manufacturing view. The sustainable techniques of manufacturing such as dry machining, minimum quantity lubrication (MQL) solid lubricant, cryogenic coolant and nano fluid MQL are explained. The paper also suggests that 15–20% of the overall machining cost is related to cooling and lubricating fluids. The total cost associated with the procurement, maintenance, and discarding such fluids may amount to approximately 17% per component in the automotive

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ROAD INTERSECTION RE-DESIGN

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Abstract: This project evaluates issues connected with vehicular movement moving through urban road at intersection. In cities like Kolhapur, which facing many problems such as frequent occurrence of traffic Congestion which result in delay, loss of time, increasing fuel consumption, increasing noise pollution and frequent interruption in traffic flow. Maulicha Putla is one of the busiest intersection in Kolhapur. This intersection faces many problems such as to traffic, collision of vehicles, long queue of number of vehicles due to traffic jam is created improper handling of traffic in peak hour. Improper location of central island (Maulicha Putla) causes there is no use of central island, due to this improper flow of traffic created. Vegetable Market, Bus stand, petrol pump are near to intersection due to this the abundant traffic is approaching to the intersection, so various problems created at intersection. Aim of this is to study of traffic problems rotary intersection at Maulicha Putla, which include site investigation (Pilot survey), measurement present geometry of intersection, followed by traffic volume count which is based onvideo graphic method, data collected at peak hours and volume conversion into PCU value (Passenger Car Unit).

Key words: Central island, peak hour, congestion, flow rate, traffic volume, capacity

1. INTRODUCTION:

Population in the India is increasing tremendously and this is leading to traffic problem as, all people nowadays have started purchasing their own vehicles. This has led the city to be congested on road and on intersection. The traffic at the maulicha putla intersection coming from six roads such as Udyam Nagar Road A, Shahu mill Road B, Rajarampuri1 Road C (one way) road towards intersection, Rajarampuri2 Road D, Ciber Road E, Pratibha Nagar road F. In that the three major roads which have the abundant traffic observed i.e Road A, B, E Along with the Public transport runs the private transport whose number is increasing day by day. Flow of traffic on lane. The study area is within the Rajarampuri Road area of Kolhapur City. Kolhapur is one of the cities of Maharashtra having area 66.82 km2 with population 635000 (census 2022). Growth in percentage of vehicle in 2015-16 (9.06%), 2016-17 (31.54%),2017-18(18%). The rapid growth of transportation activities causing acute traffic problem particularly at intersection due to mix complex flow pattern. It is important to design regulation system for this rotary because efficiency of operation, safety, speed, capacity is directly


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Seismic Behaviour and Design of RC Shear Wall using ETABS software

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Abstract: ***The present paper shows seismic behavior of building under the action of earthquake load [bhuj earthquake] by performing time history analysis. Nowadays buildings with shear walls are more popular than buildings without shear wall in earthquake prone areas due to its resistance during earthquake. In this project G+10 RCC building is considered for the structural analysis for zone III and suitable load combination. The purpose of this study is to find the prime location of shear wall and then investigate the effectiveness of best shear wall for the RCC structure. The structure is analyzed for earthquake in the type of structural system using ETABS software. Wall which is mainly designed to resist lateral forces in its own plane is called shear wall Shear wall are mainly flexural membrane which are specially designed to resist lateral forces which are caused by seismic forces and other forces. Shear wall starts from foundation level and should be continuous throughout of the building.***
Keywords: RCC building, ETABS, Time History Analysis, Shear wall, Seismic analysis

I. INTRODUCTION

A shear wall is a structural component provided to the multi storied or tall buildings or ordinary buildings in high wind velocity areas. These walls usually begin from the foundation level, along the length and width of buildings. Their thickness can be above 150 mm or below 400 mm in tall buildings and they are like vertical-oriented wide beams that carry the earthquake load towards the foundation.

Shear wall is a concrete wall made to resist lateral forces acting on tall buildings. Shear walls are vertical elements of the horizontal force resisting system. When shear walls are designed and constructed properly, they will have the strength and stiffness to resist the horizontal forces. Properly designed and detailed buildings with shear walls have exhibited very good performance during the past earthquakes. Just like reinforced concrete (RC) beams and columns, RC shear walls also perform much better if designed to be ductile. Overall geometric proportions of the wall, types and amount of reinforcement, and connection with the other elements in the building help in improving the ductility of walls.

In building construction, a rigid vertical diaphragm capable of transferring lateral forces from exterior walls, floors, and roofs to the ground foundation in a direction parallel to their planes. Examples are the reinforced-concrete wall or vertical truss. Lateral forces caused by wind, earthquake, and uneven settlement loads, in addition to the weight of structure and occupants, create powerful twisting (torsional) forces. These forces can literally tear (shear) a building apart. Reinforcing a frame by attaching or placing a rigid wall inside it maintains the shape of the frame and prevents rotation at the joints. Shear walls are especially important in high-rise buildings subject to lateral wind and seismic forces.

Need of the Shear Wall:

While columns and load-bearing walls keep buildings standing up, carrying the compression load of the structure down to its foundation, the shear wall is what keeps structures from blowing over, resisting the lateral forces of wind and seismic activity. Almost all houses have external shear walls, but internal shear walls are typically found only in larger houses and high-rise buildings subject to lateral winds and seismic forces. The tall the building, the greater the need for internal shear walls and a lateral force resisting system. Most homes and buildings in high-wind and earthquake-prone regions require exterior shear walls. However, larger houses and high-rise structures also need interior shear walls to protect against lateral wind and seismic forces.

II. OBJECTIVES

1) To model and analyze G+10 frame structure having different location of shear wall in the structure using ETABS software.
2) Comparative study of seismic behaviour of building with shear wall and without shear wall by performing nonlinear time history analysis.
3) To find lateral displacement in x and y direction
4) To study the displacement of the building.


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Identification, classification, and grading of plant leaf diseases using CBIR and K-means clustering

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ABSTRACT

Plant disease management involves the identification, classification, and grading of plant disease according to disease severity. It is not only a challenging task that involves human resources but also includes expertization and timely decisions to reduce the threat of reduced production and high spared of disease. The efficiency of recently developed systems depends on the selection of image features and accuracy in the segmentation of diseased portions. The research in this paper presents Content-Based Image Retrieval (CBIR) system implemented for the identification and classification of leaf diseases. The system is further upgraded with the extraction of diseased portion of the leaf using K-means clustering technique for grading the disease severity. The retrieval system is realized using of color, shape, and texture features of the leaf. It is observed that the proposed system performs the tasks of disease identification, classification, and severity grading accurately and consistently

Keywords: CBIR, Disease, Color, Shape, Texture

I. INTRODUCTION

Most of the population in agricultural countries depends on agriculture for livelihood. Because of suitable atmospheric condition in India agriculturalist have wide range of diversity for cultivation of suitable fruits and vegetable crops. However, the cultivation of these crops for optimum yield and quality produced is highly affected by crop diseases. Hence proper cultivation of crops requires close monitoring especially for the management of diseases that can affect production significantly and subsequently the post-harvest life. Disease is caused by pathogen and its symptoms are observed on plant leaves, stem, flowers and fruits and also produce different traits like change in the size and shape of leaf, stem, flowers and fruits. Identification of the disease in its early stage enables timely cure and control over it. This process requires an expert to identify and classify the disease, describe the method of treatment and protection. Identifying the plant disease is not easy task. It requires experience and knowledge of plants and their diseases. It also requires accuracy in describing the symptoms of plant diseases. Agriculturalist can depend on a system which has experience and knowledge, called an Expert System.

An expert system can be an excellent agriculturalist, agricultural advisor, Electronic or Computerized expert system. An excellent agriculturalist is able to catch the change of the crops in the growing process and they manage the cultivation in proportion to the change. This ability of catching the delicate change in crops is developed in them through the observation and long cultivation experience. It is difficult for them to transmit this knowledge to future generations [1]. If agriculturalists decide to take advice from agricultural expert regarding the treatment of pest /disease/ fruit to their crop/plant in order to increase the crop productivity then he may face following situations [2]:

i) Sometimes agriculturalist has to go long distances for approaching the expert.
ii) Even though they go such distances expert may not be available at that time.
iii) Sometimes, the expert whom a agriculturalist contacts, may not be in a position to advise him with the available information and knowledge.

In these cases seeking the expert advice is very expensive and time consuming.

Since disease diagnosis which includes identification classification and grading is based on visual inspection, it is possible to apply several image processing and computer vision techniques for diagnosis. The systems developed using such techniques are considered as Electronics expert systems. Electronic expert systems help agriculturalists in identifying diseases, making the right decision of treatment and selecting the best one. The expert systems are intelligent computer programs that are capable of offering solutions or advices related to specific problems in given domain, both in a way and at a level comparable to that of human expert in a field. One of the advantages of using Electronic expert systems is its ability to reduce the information that human users need to process, reduce personnel costs and increase throughput. Another advantage of expert system is that it performs tasks more consistently than human experts [3].


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An Evaluation of Road Safety Performance for Selected Road Stretches in Kolhapur City

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Abstract: ***The major cause for global deaths and injuries are mainly due to road crashes. It is worst in developing countries due to rapid and unplanned urbanization. It was estimated in 2010 that about 1, 60,000 persons have died due to road crashes in India. Since, road safety is influenced by many factors it involves complex studies to arrive at the reasons for accidents. As a result the accident study itself remains under estimated in many of the countries specially in developing countries. In recent years several indicators are developed in order to study the factors influencing the accident and based on which the improvement measures can be adopted to reduce accident rate. In the present study two stretches are selected to validate the Road safety Index (RSI) equation and to suggest the improvements to the selected road stretches. Also an analysis is made to check if there is any improvement in the RSI value.***

Keywords: Road safety, WHO, IRC, RSI, Road safety performance

I. INTRODUCTION

Road safety is a multi dimensional issue. In order to improvise the safety of road it incorporates the development and management of road infrastructure, rules and regulations, law enforcement to the road users etc.,. The accident rate has increased rapidly with increase in road network, motorisation and urbanisation in the country. Worldwide, over 1.2 million people are killed in road crashes each year and 20 to 50 million are injured according World health Organisation, 2009. It means that every day around the world, more than 3000 people die from road traffic injury. WHO estimates road accidents will become the world's third leading cause of death by the year 2020. India has a well established road network of about 33 kilometer. At the same time, India has one of the highest accident rates in the world with more than 14 accidents per thousand vehicles every year.

The road safety audit, when used for applications on existing roads is more appropriately termed as RSI. The process is a proven highly cost effective process that assists with production of safe roads.India has the second largest road network in the world with over 3 million km of roads of which 60% are paved. These roads make a vital contribution to India's economy. Road safety is emerging as a major social concern in the country. The statistics with an average mortality rate of 1, 00,000 persons dying in road accidents. India having more than 33 lakh kilometer of well-spread road network. At the same time, India has one of the highest accident rates in the world with more than 14 accidents per thousand vehicles every year, compared to only 6 to 8 accidents per thousand vehicles in developed countries. India accounts for about 10 percent of road accident fatalities worldwide. An estimated 12, 75,000 persons are seriously injured on the road every year. Studies on accidents, the world over, have shown that the human factor is responsible for a majority of accidents. Road Safety is a multi-dimensional issue in order to improve the safety of road; it incorporates the development and management of road infrastructure, rules and regulations, law enforcement to the road users etc.

Kolhapur is the one of the major cities in Maharashtra state. As per report of 2011 censes of Kolhapur city population is 5,49,236 (approximate). The no. of accidents in Kolhapur city increasing day by day is due to increases in population, increase in vehicles registration, increase in road network and rapid urbanization. The no. of accidents due to improper lane changing, prohibitated dangerous passing and merging etc. therefore it is necessary to study the road safety and performance in Kolhapur city.

II. OBJECTIVES

1) Review of current status and literature review and understanding the major causes of accidents of road.
2) To control over the risk involved in operating vehicles.
3) To suggest improvement for safe working of vehicle on road.
4) Detail Study of selected road stretches.


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Employing Energy and Statistical Features for Automatic Diagnosis of Voice Disorders

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Abstract

The presence of laryngeal disease affects vocal fold(s) dynamics and thus causes changes in pitch, loudness, and other characteristics of the human voice. Many frameworks based on the acoustic analysis of speech signals have been created in recent years; however, they are evaluated on just one or two corpora and are not independent to voice illnesses and human bias. In this article, a unified wavelet-based paradigm for evaluating voice diseases is presented. This approach is independent of voice diseases, human bias, or dialect. The vocal folds' dynamics are impacted by the voice disorder, and this further modifies the sound source. Therefore, inverse filtering is used to capture the modified voice source. Furthermore, the fundamental frequency independent statistical and energy metrics are derived from each spectral sub-band to characterize the retrieved voice source. Speech recordings of the sustained vowel /a/ were collected from four different datasets in German, Spanish, English, and Arabic to run the several intra and inter-dataset experiments. The classifiers' achieved performance


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A Literature Review on Beam Column Joints with Different Loading Condition and Methods of Strengthening

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Abstract: ***The beam–column joint is measured as the most important zone in a reinforced concrete moment resisting frame. It is subjected to large forces during earthquake and its behaviour has a major influence on the response of the entire structure. As a result, a great attention has to be paid for good detailing of such joint. The absence of transverse reinforcement in the joint, insufficient development length for the beam reinforcement and the inadequately spliced reinforcement for the column just above the joint can be considered as the most important causes for the failure of the beam–column joint under any unexpected transverse loading on the building. The recent earthquakes revealed the importance of the design of reinforced concrete (RC) structures with ductile behaviour. Ductility can be described as the ability of reinforced concrete cross sections, elements and structures to absorb the large energy released during earthquakes without losing their strength under large amplitude and reversible deformations.***

I. LITERATURE REVIEW

A. Said M. Allam , Hazem M.F. Elbakry , Israa S.E. Arab(2018)

The joints between beams and columns are crucial zones in a reinforced concrete moment resisting frame. The behaviour of such joints greatly influences the strength and ductility of the overall frame. In this research, analysis of three-dimensional numerical models of exterior reinforced concrete beam-column joints under monotonic loading was performed using the finite element ABAQUS package.

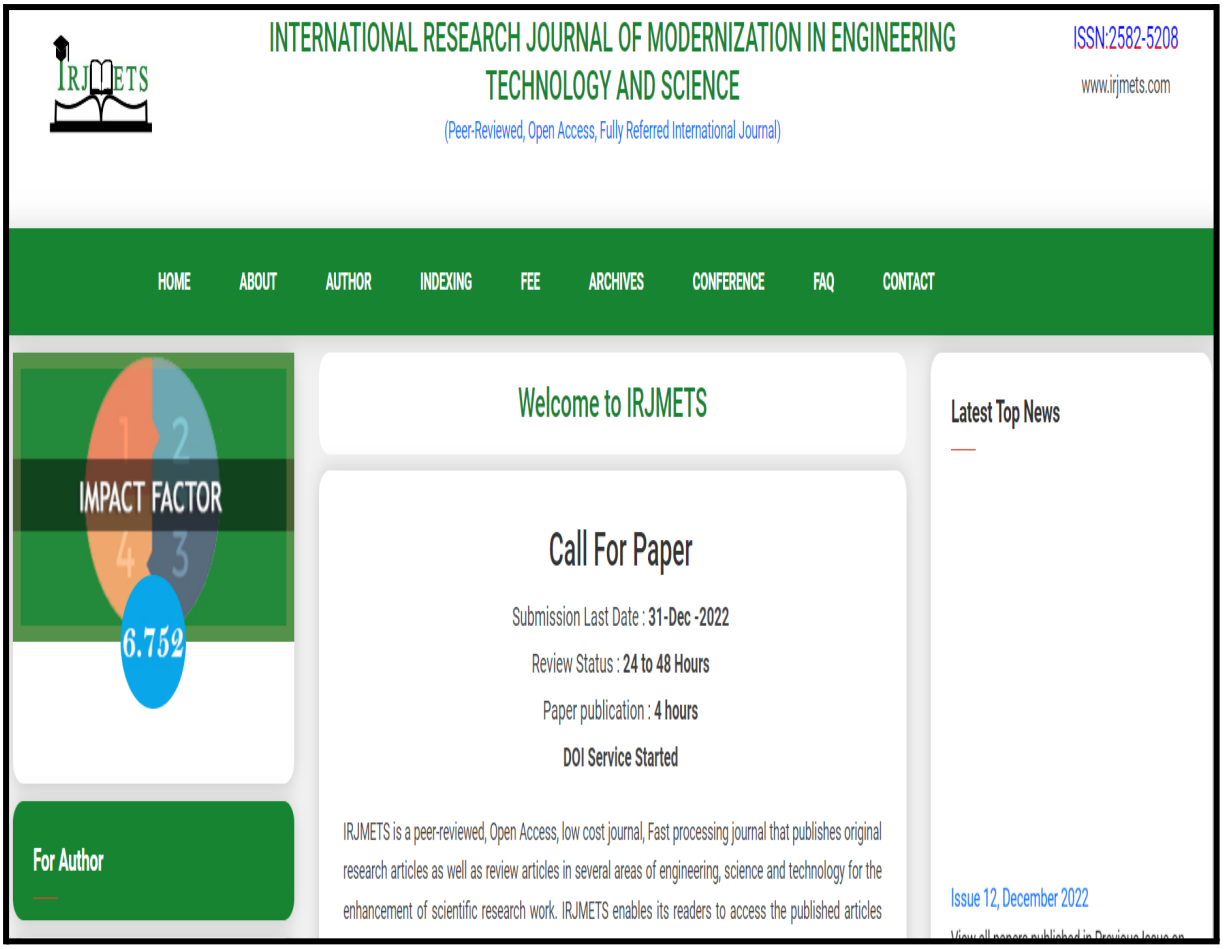
Concrete and reinforcing steel material nonlinearities, as well as bond characteristics between reinforcing bars and surrounding concrete were considered in the analysis. A parametric study involving thirty joint models was conducted to examine the influence of concrete strength, column axial load, joint stirrups and shape of the beam top reinforcement on the beam tip load and displacement capacities.

The concrete dimensions and reinforcement of the studied models were chosen to ensure the occurrence of joint failure. The use of straight bars for beam top reinforcement resulted in generally lower ultimate loads than those obtained with L- and U-shaped bars. Similar joint behavior was demonstrated for the cases of using Land U-shaped beam top reinforcement.

B. Jawed Qureshi, Dr. Yashida Nadir, Shaise K John(2020)

Presented are test results from eight full-scale pultruded FRP beam-to-column joint subassemblies. Moment-rotation behaviour, failure modes, joint classification and load enhancement due to semi rigid end conditions are discussed. Testing is divided in two series: first had FRP beam-to-steel column joints and second FRP beam-to-FRP column joints. The joints are either flange and web cleated or flange cleated only.

The connection method is bolting or 'hybrid' combining both bolting and bonding. Test parameters include effects of adhesive bonding, column flexibility, cleat material and joint configuration. Bolted and bonded joints not only increased moment resistance but stiffness as well. Using steel cleats instead of FRP resulted in a 50% increase in the moment resistance. Four failure modes, shear-out failure, adhesive debonding with shear-out failure, tensile tearing of the column flanges from the web and de lamination cracking of cleats were observed. Use of adhesive increased both moment capacity and rotational stiffness, but it reduced the maximum rotation capacity. Bolted and bonded joints failed in a brittle manner due to adhesive failing in tension and shear, and the failure transferring to the bolted region. There was 60% increase in moment capacity for FRP beam-to-steel column joints and 20% for FRP beam-to-FRP column joints. While industry practice of using adhesive alongside bolting should be continued, any improvement in either moment or rotational stiffness should be used cautiously.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DETECTION AND QUANTIFICATION OF BLOOD CELLS USING IMAGE PROCESSING

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ABSTRACT

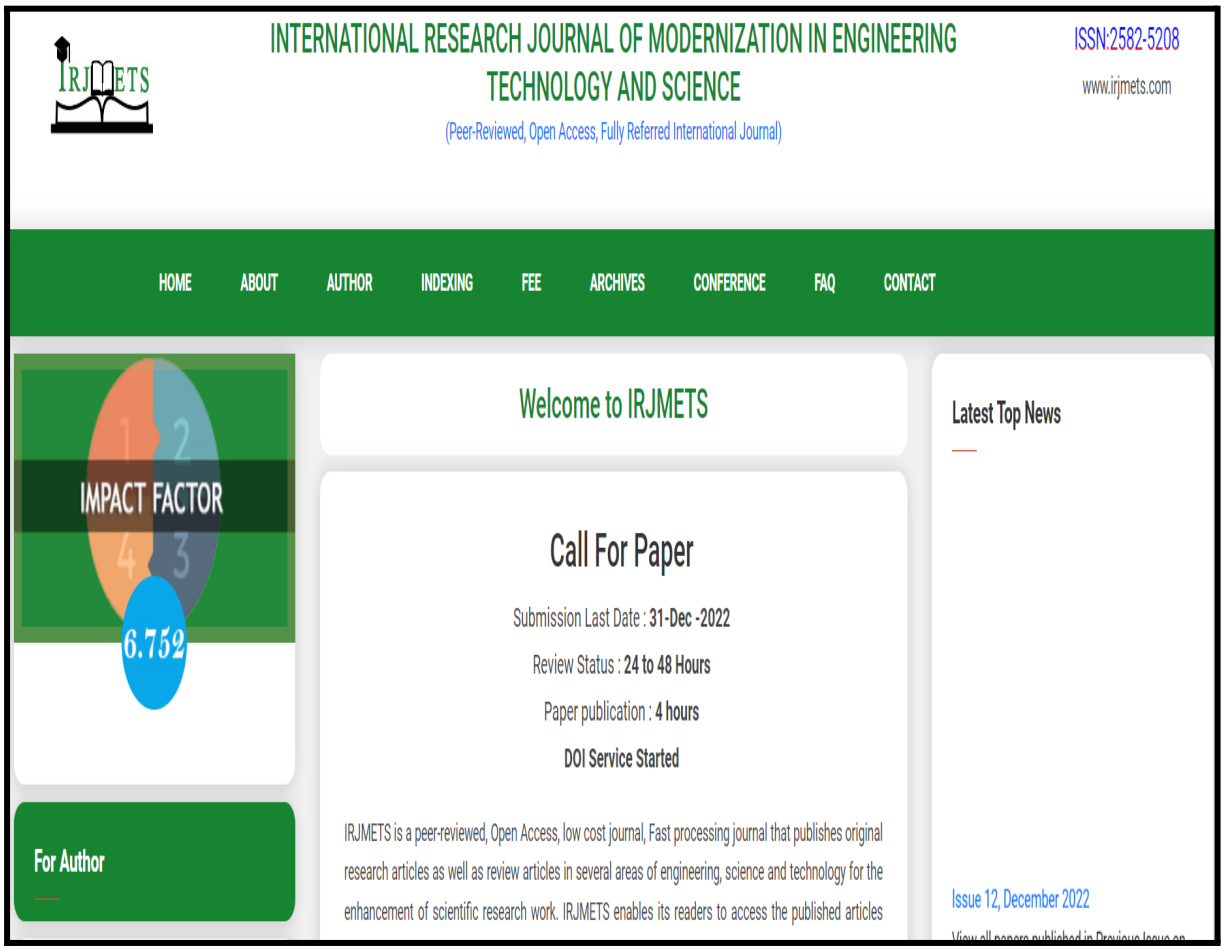
The digital microscopy devices are a strong tool to research the dynamic molecular processes of living cells in human bodies as the commonly used wide field of fluorescence imaging lack the quantitative power and do not provide sufficient resolution to localize single copies of proteins precisely within mitotic structures to map their molecular architecture. We describe a contrast because the difference in luminance or color that makes an object is distinguishable. To collect the medical data of blood cells contrast within the color and brightness of the item and other objects within the identical field of view. Image enhancement is taken into account mutually of the basic processes in image analysis. The goal of contrast enhancement is to increase up the quality of an image to become more suitable for a selected application to count the cells and detect the cells. Image enhancement methods are proposed for various applications and efforts are directed to further increase the quality of the enhancement results and minimize the computational complexity and memory usage. As during this paper, an image enhancement methods supported threshold and rendering is studied. Using the inbuilt function of JAI we propose new advanced enhancement techniques.

Keywords: Contrast, Segmentation, Histogram, Rendering, Scaling, Threshold.

I. INTRODUCTION

Commonly people require to test their health details regularly, which has become an important need in every person's life. So it's essential to locate the fundamentals of blood cells in this today's era. The goal of such diagnosis is to obtain the disease from an analysis or to obtain in an accurate way or it may cause lot of loss for health and wealth also. In the existing detection, it is impossible follow large variation of blood cells and also get low quality of images and difficulties in getting real data in all processes. They used real microscopy images prepared in the laboratory which is a difficult and yet challenging task to identify, and the ground truth changed into determined by a laboratory expert [1]. Nearly 2.9 differences was calculated between the manual and automatic counting of red blood cells. Their method tolerated a degree of overlapping. But in cases with a high degree of blood cells, their approach tolerated a degree of overlapping, the iterative threshold method was unable to detect faint red cells. Here the detection keeps look on all the possibilities and get the most useful data. Detection and quantification of each blood cell pixels are checked to detect. The process where finding manually verifying and taking blood samples can be time consuming and too expensive as it is the reason of health issues[2]. To determine the same field is used both in the index and for sequencing the records in the normal range of contrast sensitivity and its determinants. As the difference in visual properties that makes an object distinguishable/darker or brighter from other objects and the background. In data of the real world, contrast analyses by the variation in the brightness and code color of the object and other objects within the same field of view [3]. Hence there is a need to design an accurate application where pathology can respond to faster data retrieval in less time. The proposed system uses a JAI technique for detecting blood cell analysis. JAI has in built function which will has been one of the best approaches to detect and analysis detection of blood cell image processing as it uses counting of cell ,its edges and its other features[4]. It uses Organization of Indexed files which is a technique that store the data file in which records can be accessed by means of an index.

If the same field is used both in the file of the index indicator file and for sequencing the records in the file content, such index where there use the primary key is called the primary index. The performance of such files is better for faster access of the result from the data which is collected. This system also find image rendering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HUMAN IRIS PATTERN RECOGNITION AND MATCHING SYSTEM FOR EXCEPTIONAL SECURITY IDENTIFICATION

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ABSTRACT

The goal of the venture is to carry out an open-source iris acknowledgment framework in request to confirm the asserted exhibition of the innovation. The likelihood of observing two individuals with indistinguishable iris designs is viewed as around 1 in 1052 (population of the earth is of the request 1010). Not a single one-egged twins or a future clone of an individual will have a similar iris designs. The iris is thought of to be an inner organ since it is so very much ensured by the eyelid and the cornea from natural harm. It is steady over the long haul despite the fact that the individual ages. Iris acknowledgment is the most exact and quickest of the biometric confirmation techniques. Iris acknowledgment investigates the highlights that exist in the hued tissue encompassing the student, which has 250 focuses utilized for examination, including rings, wrinkles, and spots. Iris acknowledgment utilizes a standard camcorder framework and should be possible from further away than aretinal sweep. It can make a sufficiently exact enough estimation that can be utilized for identification purposes, not simply confirmation. The development tool used is MATLAB, and emphasis is on the software for performing recognition, and not hardware for capturing an eye image. The iris images were taken from IIT Delhi database, which was solely taken for research purpose.

Keywords: Biometric Recognition, Iris Recognition, Wavelet, Legendre Wavelet Filter And Gabor Wavelet Filter.

I. INTRODUCTION

The requirement for a solid method for a distinguishing proof and check framework has assessed numerous biometric acknowledgment frameworks. These biometric acknowledgment frameworks incorporate Fingerprint framework, facial acknowledgment framework iris acknowledgment framework and numerous more [1]. Among these acknowledgment frameworks, iris acknowledgments framework is accepted to be one of the most dependable and effective method for acknowledgment. Iris is dependable on the grounds that an individual can be validated from distances very much like in facial acknowledgment frameworks and the irises never change very much like fingerprints. The iris acknowledgment framework enjoys the two benefits the finger impression, and the facial acknowledgment has [2].

The sclera enjoys a benefit in that it very well may be caught utilizing a noticeable frequency camera [3]. Subsequently, applications which might include the sclera are wide running. The commitment of our work is the plan of a vigorous sclera acknowledgment framework with high exactness. The framework contains new sclera division and blocked eye identification techniques. The propose work an effective strategy for vessel improvement, extraction, and linearization. In the element extraction [4]and matching process[5]stages, we also foster a productive technique that is direction, scale, light, and distortion invariant.

Human acknowledgment frameworks utilizing vein designs for example have been examined utilizing the retina, palms, fingers, conjunctive vasculature, and sclera. The sclera can be characterized as the white and obscure external defensive piece of the eye [6]. It comprises of four tissue layers: episclera, stroma, lamina fusca and endothelium which encompass the iris.

The iris is the shaded tissue around the student. Six essential feelings by concentrating on looks. This has been utilized for further developing investigation, assessment mining and different assignments like grammatical form labeling.

The issue of settling character of an individual can be arranged into two kinds:

1. Verification


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To Study Rehabilitation of Old Elevated Water Tank and to Generate Non-Conventional Energy

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Abstract: ***Many of the existing reinforced concrete structures around the world are in urgent need of reinforcement, repair, or reconstruction due to structural damage that occurs for a variety of reasons. The main purpose of this project is the restoration of an existing ancient water tank (Panyacha Khajina) on Old Mahadwar Road in Kolhapur, Maharashtra. Therefore, it is necessary to store water for daily use, the water storage tank should be in good condition and should be repaired if damaged. To find defects in the aquarium, first perform a visual inspection such as photography, checking for the effects of cracks and corrosion, and then inspect the existing aquarium structure, including collecting information on repair work. In this plot, you can install the solar system on top of the existing water tank to increase the efficiency of the plot. Since we are not using a surface water tank, the project's idea is to install solar panels on the roof of the tank to generate electricity so that it can be used for various purposes. Next, you can deploy 113 solar panels and find a total of about 146 units of energy per day. Due to the limitations and impacts of non-renewable energy sources, people around the world need to pay attention to renewable energy sources.***

Keywords: Renewable energy, Non-renewable energy, Restoration, aquarium.

I. INTRODUCTION

Rehabilitation of structure:- Water tanks are used to store daily water, and the water tanks need to be kept in good condition. Elevated water tanks are mainly used for water supply and fire protection. Clean water is essential for a healthy and safe life. Buildings built usually lose their strength as the building ages {i.e: Usually after 20 or 30 years.} Over time, these buildings have lost strength due to material deterioration, unexpected overloads, structural defects, and cracks in water tanks. The structure is weakened due to the reduced durability. If the cause of the cracking or deterioration of the concrete is not identified in time, the aquarium may fall or an accident may occur. Therefore, repair and rehabilitation are very important. That means updating the structure by repairing and repairing the damage. Helps improve structural stability and maintainability. Instead of demolishing or pouring the entire structure, we suggest remediation measures that can re-inspect the structure, be economical and save money. Before trying the repair method, a planned approach is needed to examine the condition of the concrete and rebar. The first step in repair and refurbishment is the correct diagnosis for a successful refurbishment operation. It deals with non-destructive evaluation techniques, laboratory tests and conditions. Commonly used non-destructive testing such as rebound hammer test, ultrasonic pulse velocity test (UPV), pullout test, core test, chloride test, carbonization test, pH measurement, resistance test, differential thermal analysis (DTA), etc.

Non-Conventional Energy:- Not only is energy essential to human survival, its availability is seen as the backbone of national growth and development. India has experienced rapid urbanization and industrialization over the past few decades.

Today, with the declining amount of renewable energy sources, the last decade has become increasingly important to the cost per watt of solar energy devices. It will definitely be economical and will grow as a better technology in terms of cost and applications over the next few years. The earth receives sunlight from above every day (about 1366W). This is an unlimited source of energy available for free. The great advantage of solar energy over other traditional generators is the ability to convert sunlight directly into solar energy using small photovoltaic (PV) solar cells. There has been a lot of research activity to combine solar energy processes by developing high conversions from solar cells / modules / panels. The biggest advantage of solar energy is that it is freely available and available in large quantities to the general public, compared to the prices of various fossil fuels and oils over the last decade. In addition, solar energy requires significantly less personnel than traditional power generation technologies. Unconventional energy has the potential to minimize pollution, reduce global warming, create new industries and jobs, and drive the country towards a cleaner and healthier energy future.


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Seismic Behaviour and Design of RC Shear Wall using ETABS software

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Abstract: ***The present paper shows seismic behavior of building under the action of earthquake load [bhuj earthquake] by performing time history analysis. Nowadays buildings with shear walls are more popular than buildings without shear wall in earthquake prone areas due to its resistance during earthquake. In this project G+10 RCC building is considered for the structural analysis for zone III and suitable load combination. The purpose of this study is to find the prime location of shear wall and then investigate the effectiveness of best shear wall for the RCC structure. The structure is analyzed for earthquake in the type of structural system using ETABS software. Wall which is mainly designed to resist lateral forces in its own plane is called shear wall Shear wall are mainly flexural membrane which are specially designed to resist lateral forces which are caused by seismic forces and other forces. Shear wall starts from foundation level and should be continuous throughout of the building.***
Keywords: RCC building, ETABS, Time History Analysis, Shear wall, Seismic analysis

I. INTRODUCTION

A shear wall is a structural component provided to the multi storied or tall buildings or ordinary buildings in high wind velocity areas. These walls usually begin from the foundation level, along the length and width of buildings. Their thickness can be above 150 mm or below 400 mm in tall buildings and they are like vertical-oriented wide beams that carry the earthquake load towards the foundation.

Shear wall is a concrete wall made to resist lateral forces acting on tall buildings. Shear walls are vertical elements of the horizontal force resisting system. When shear walls are designed and constructed properly, they will have the strength and stiffness to resist the horizontal forces. Properly designed and detailed buildings with shear walls have exhibited very good performance during the past earthquakes. Just like reinforced concrete (RC) beams and columns, RC shear walls also perform much better if designed to be ductile. Overall geometric proportions of the wall, types and amount of reinforcement, and connection with the other elements in the building help in improving the ductility of walls.

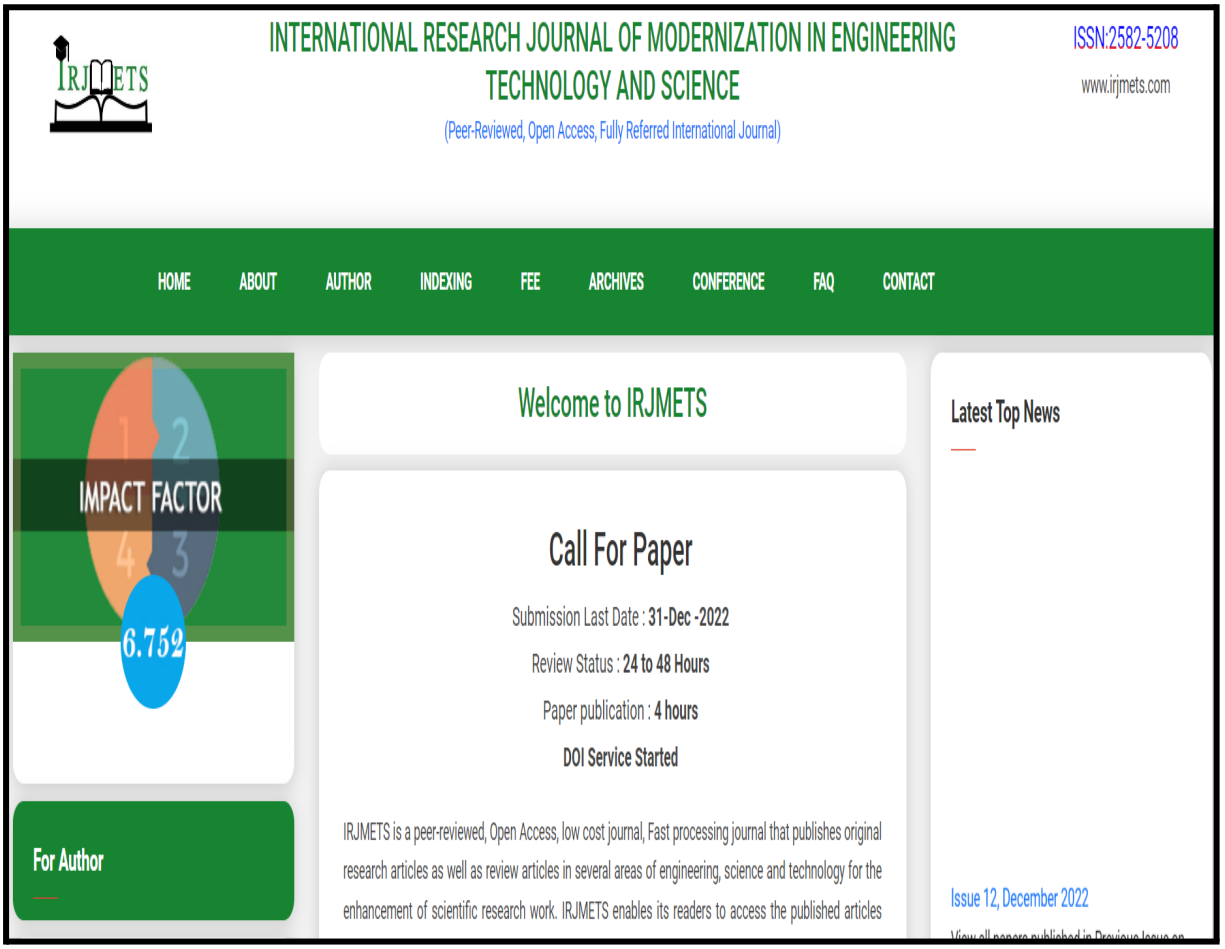
In building construction, a rigid vertical diaphragm capable of transferring lateral forces from exterior walls, floors, and roofs to the ground foundation in a direction parallel to their planes. Examples are the reinforced-concrete wall or vertical truss. Lateral forces caused by wind, earthquake, and uneven settlement loads, in addition to the weight of structure and occupants, create powerful twisting (torsional) forces. These forces can literally tear (shear) a building apart. Reinforcing a frame by attaching or placing a rigid wall inside it maintains the shape of the frame and prevents rotation at the joints. Shear walls are especially important in high-rise buildings subject to lateral wind and seismic forces.

Need of the Shear Wall:

While columns and load-bearing walls keep buildings standing up, carrying the compression load of the structure down to its foundation, the shear wall is what keeps structures from blowing over, resisting the lateral forces of wind and seismic activity. Almost all houses have external shear walls, but internal shear walls are typically found only in larger houses and high-rise buildings subject to lateral winds and seismic forces. The tall the building, the greater the need for internal shear walls and a lateral force resisting system. Most homes and buildings in high-wind and earthquake-prone regions require exterior shear walls. However, larger houses and high-rise structures also need interior shear walls to protect against lateral wind and seismic forces.

II. OBJECTIVES

1) To model and analyze G+10 frame structure having different location of shear wall in the structure using ETABS software.
2) Comparative study of seismic behaviour of building with shear wall and without shear wall by performing nonlinear time history analysis.
3) To find lateral displacement in x and y direction
4) To study the displacement of the building.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DIET MODELLING USING NUTRITIONAL REQUIREMENT ANALYSIS

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ABSTRACT

Diet Modelling using nutritional requirement analysis is a system that enables individuals who want to maintain their bodies and want to get healthy diet plans. And also, this system provides a dietitian with an easy and accurate way to create their client's diet plan. Efforts in current health care practice to make health care more accessible, effective, and efficient through the use of information technology may include computer-based diet menu generation. While many such systems already exist, their focus is mainly on helping healthy individuals count their calories and monitor menu choices based on a predetermined calorie value.

Although these are useful in some ways, they are not suitable for monitoring, planning, and managing the dietary needs and requirements of patients. This paper presents a web-based application that simulates the process of menu suggestions according to the standard practice employed by dietitians.

Keywords: Diet, Modelling, Nutrition, Dietitian, Dietary Requirements, Nutritionist, Health Care.

I. INTRODUCTION

The "DIET MODELLING USING NUTRITIONAL REQUIREMENT ANALYSIS" is a system that is planning to be designed for Dieticians to create their client's diet plan and also for individual users or peoples who wants to get a healthy diet plan for their needs. We are analyzing the problems or difficulties the doctors are facing while creating the diet chart of the patient and we are planning to create a system that deals with the ongoing problems with the existing system, We are aiming to overcome that and provide a useful system to the user. And also, another existing system is designed only for dieticians and we want to create a system that can be used by the individual user also. This "DIET MODELLING USING NUTRITIONAL REQUIREMENT ANALYSIS" create the client's DIET plan. This project is mainly preferred for all types of people for creating their required DIET plan.

II. METHODOLOGY

We needed to find a way to develop a system which will help the Dietitian or Doctor to easily create a diet plan for client or an individual user to create diet plan for themselves as per requirement for their dietary needs and body requirements.

First Phase: -

Step 1:

At the start of the project, we needed to decide what project should we pick, at and from which language we develop our project. And which database should we use to handle complex data? After researching, and asking experts we decided to develop a website for dietitians and users to decrease their time to create a perfect diet plan for this we decide to use languages for coding HTML, JavaScript, PHP, and Angular JS, and the database we use MySQL.

Step 2:

In the second step of the first phase, we gathered the requirements of the project, decided what the workflow of the model is.

Second Phase: -

Step 3:


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An Evaluation of Road Safety Performance for Selected Road Stretches in Kolhapur City

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Abstract: ***The major cause for global deaths and injuries are mainly due to road crashes. It is worst in developing countries due to rapid and unplanned urbanization. It was estimated in 2010 that about 1, 60,000 persons have died due to road crashes in India. Since, road safety is influenced by many factors it involves complex studies to arrive at the reasons for accidents. As a result the accident study itself remains under estimated in many of the countries specially in developing countries. In recent years several indicators are developed in order to study the factors influencing the accident and based on which the improvement measures can be adopted to reduce accident rate. In the present study two stretches are selected to validate the Road safety Index (RSI) equation and to suggest the improvements to the selected road stretches. Also an analysis is made to check if there is any improvement in the RSI value.***
Keywords: Road safety, WHO, IRC, RSI, Road safety performance

I. INTRODUCTION

Road safety is a multi dimensional issue. In order to improvise the safety of road it incorporates the development and management of road infrastructure, rules and regulations, law enforcement to the road users etc.,. The accident rate has increased rapidly with increase in road network, motorisation and urbanisation in the country. Worldwide, over 1.2 million people are killed in road crashes each year and 20 to 50 million are injured according World health Organisation, 2009. It means that every day around the world, more than 3000 people die from road traffic injury. WHO estimates road accidents will become the world's third leading cause of death by the year 2020. India has a well established road network of about 33 kilometer. At the same time, India has one of the highest accident rates in the world with more than 14 accidents per thousand vehicles every year.

The road safety audit, when used for applications on existing roads is more appropriately termed as RSI. The process is a proven highly cost effective process that assists with production of safe roads.India has the second largest road network in the world with over 3 million km of roads of which 60% are paved. These roads make a vital contribution to India's economy. Road safety is emerging as a major social concern in the country. The statistics with an average mortality rate of 1, 00,000 persons dying in road accidents. India having more than 33 lakh kilometer of well-spread road network. At the same time, India has one of the highest accident rates in the world with more than 14 accidents per thousand vehicles every year, compared to only 6 to 8 accidents per thousand vehicles in developed countries. India accounts for about 10 percent of road accident fatalities worldwide. An estimated 12, 75,000 persons are seriously injured on the road every year. Studies on accidents, the world over, have shown that the human factor is responsible for a majority of accidents. Road Safety is a multi-dimensional issue in order to improve the safety of road; it incorporates the development and management of road infrastructure, rules and regulations, law enforcement to the road users etc.

Kolhapur is the one of the major cities in Maharashtra state. As per report of 2011 censes of Kolhapur city population is 5,49,236 (approximate). The no. of accidents in Kolhapur city increasing day by day is due to increases in population, increase in vehicles registration, increase in road network and rapid urbanization. The no. of accidents due to improper lane changing, prohibitated dangerous passing and merging etc. therefore it is necessary to study the road safety and performance in Kolhapur city.

II. OBJECTIVES

1) Review of current status and literature review and understanding the major causes of accidents of road.
2) To control over the risk involved in operating vehicles.
3) To suggest improvement for safe working of vehicle on road.
4) Detail Study of selected road stretches.


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VISUALISING AND FORECASTING STOCK INDEX USING ANALYTICAL TOOLS

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***Abstract*: The stock market is an important part of the economic system of all countries and is a major source of funding. Every day, millions of traders invest in exchanges. Most of these investors have lost money and others are profiting. However, looking at each trading day, the losses or profits are not completely consistent. The demand for stock price forecasts is so high that stock market analysis is needed. This project attempts to implement a machine learning approach for predicting stock prices. Machine learning is effectively used to predict stock prices. The purpose is to predict stock prices in order to make more informed and accurate investment decisions. We propose a stock price forecasting system that integrates mathematical functions, machine learning, and other external factors to achieve better stock forecasting accuracy and make profitable transactions.**

This project aims to weigh the effectiveness of forecasting algorithms on stock market data and gain general insights into this data through visualization to predict future equity behavior and the value-at-risk of each equity. It is said that, this project includes the concepts of data mining and statistics. This project makes use of NumPy, Pandas, and data visualization libraries. This is important in our case, as the previous price of the stock is important in predicting future prices. We have developed a model that predicts whether the price will rise or fall while predicting that the actual price of the stock will rise.

***Keywords*-** Stock Market Prediction, NumPy, Pandas, Machine Leaning, and Tweeter API, Web APP.

I. INTRODUCTION

Predicting how the stock market works is one of the most difficult tasks. There are numerous factors involved in the forecast. Physical factors and psychological, rational and irrational behavior. All of these aspects combine to fluctuate stock prices, making them extremely difficult to predict with high accuracy.

Can you pioneer machine learning in this area? Machine learning techniques can use features such as the latest company announcements and quarterly sales to reveal patterns and insights you've never seen before, using these. You can definitely make accurate predictions. Reduce applications as much as possible to avoid errors when entering data. Also, if you enter invalid data, an error message will be displayed. No formal knowledge is required for the user to use this system. Therefore, it is user-friendly, and the visualization and prediction of stock indexes using analysis tools proves that an error-free, safe, reliable and fast system can be realized. This helps user's focus on other activities rather than focusing on records management. Therefore, it helps organizations make better use of their resources.

II. LITERATURE REVIEW

Stock price prediction using machine learning is present to estimate future stock value and machine learning technique like LSTM for existing work. This machine learning algorithm is designed to provide the best prediction result of the future stock price. In this proposed system, LSTM is able to capture changes in stock price behavior over the specified period.

Design a machine learning based normalization for stock price prediction. The dataset used for the analysis was selected from Yahoo Finance. It consists of approximately 9,000 records of the requested share price and other relevant data. The data reflected the stock price at specific time intervals for each day of the year. It contains various data like date, symbol, open price, close price, low price, high price and volume. Data for only one company were considered here. All data was available in a CSV file, which was first

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ROAD INTERSECTION RE-DESIGN

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Abstract: This project evaluates issues connected with vehicular movement moving through urban road at intersection. In cities like Kolhapur, which facing many problems such as frequent occurrence of traffic Congestion which result in delay, loss of time, increasing fuel consumption, increasing noise pollution and frequent interruption in traffic flow. Maulicha Putla is one of the busiest intersection in Kolhapur. This intersection faces many problems such as to traffic, collision of vehicles, long queue of number of vehicles due to traffic jam is created improper handling of traffic in peak hour. Improper location of central island (Maulicha Putla) causes there is no use of central island, due to this improper flow of traffic created. Vegetable Market, Bus stand, petrol pump are near to intersection due to this the abundant traffic is approaching to the intersection, so various problems created at intersection. Aim of this is to study of traffic problems rotary intersection at Maulicha Putla, which include site investigation (Pilot survey), measurement present geometry of intersection, followed by traffic volume count which is based onvideo graphic method, data collected at peak hours and volume conversion into PCU value (Passenger Car Unit).

Key words: Central island, peak hour, congestion, flow rate, traffic volume, capacity

1. INTRODUCTION:

Population in the India is increasing tremendously and this is leading to traffic problem as, all people nowadays have started purchasing their own vehicles. This has led the city to be congested on road and on intersection. The traffic at the maulicha putla intersection coming from six roads such as Udyam Nagar Road A, Shahu mill Road B, Rajarampuri1 Road C (one way) road towards intersection, Rajarampuri2 Road D, Ciber Road E, Pratibha Nagar road F. In that the three major roads which have the abundant traffic observed i.e Road A, B, E Along with the Public transport runs the private transport whose number is increasing day by day. Flow of traffic on lane. The study area is within the Rajarampuri Road area of Kolhapur City. Kolhapur is one of the cities of Maharashtra having area 66.82 km2 with population 635000 (census 2022). Growth in percentage of vehicle in 2015-16 (9.06%), 2016-17 (31.54%),2017-18(18%). The rapid growth of transportation activities causing acute traffic problem particularly at intersection due to mix complex flow pattern. It is important to design regulation system for this rotary because efficiency of operation, safety, speed, capacity is directly


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Behaviour of Compressive Strength of M20 Grade Concrete using Ruber Crumb, Magnetized and Normal Water

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***Abstract*— Water plays an important role in the concrete preparation. It plays an important role in workability and strength of concrete. A new technology known as magnetized water is used to increase the workability and strength of concrete. At the same time, after pure water is magnetized, we should inject immediately the magnetized water into the sample baths of the instrument to measure their properties because the time, in which the magnetization effect can be retained, is finite. The experiments should be repeated about 2-3 times for their credibility. Hence normal water concrete with crumb rubber shows nearly same strength compared to normal water concrete, so waste can put to work. This paper aims to comparative study of M20 grade concrete with Crumb Rubber and magnetic water. The literature study showed that there can be improvement in compressive strength of concrete when it is used with magnetic water. the results here show the compressive strength of concrete can be considerably increased.**

Keywords: Magnetise Water, Rubber Crumb, Compressive strength.

INTRODUCTION

In this research study, the effect of magnetized water on compressive strength of concrete was studied, in order to obtain operative concrete with high resistance and at a lower cost. Data were collected from previous studies and research. Compressive strength tests were carried out and it was found out that concrete produced by the magnetic technology is easy to operate without affecting the compressive resistance of concrete. It was also found that magnetized water increases the compressive resistance of concrete while cement is reduced up to 25%. As considering the crumb rubber huge amount of waste can be brought into converting factor as comparing on going global wastages solution. Urbanization and the day-to-day exponential increase in the number of automobiles has increased the usage of rubber. As an attempt to reuse this waste, many experimental studies are carried out using it as a filler material in concrete industry. Water is an important ingredient of concrete as it actively participates in chemical reaction with cement. Since it helps to form strength giving cement gel, the quantity and quality of water is required to be studied. So, there is a need to do the necessary research on modification of water to increase the strength and quality of concrete.

Hence, it can be expected that partial replacement of natural fine aggregates with recycled fine aggregates might not decrease the strength to a larger extent. To overcome above problems with recycled aggregates concrete, now a day's electromagnetic water is used to manufacture the concrete by some researchers. Electro-magnetic water concrete has been recently developed by using electromagnetically treated water instead of potable water in concrete. Based on the literature survey, it is observed that, electro-magnetized water is found to increase compressive strength of concrete by 20% to 30% Based on the above scenario and literature study, present study is focused on the experimental investigation to check the effect of crumb rubber on concrete, comparison of normal water concrete and electromagnetic water concrete. Ultimately, it is expected that the use of rubber crumb and magnetic water will help to increase the strength of concrete and enhance the re-centring ability of concrete. Recycled fine aggregates will be used for re-using the demolished waste. While


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A Literature Review on Beam Column Joints with Different Loading Condition and Methods of Strengthening

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Abstract: ***The beam–column joint is measured as the most important zone in a reinforced concrete moment resisting frame. It is subjected to large forces during earthquake and its behaviour has a major influence on the response of the entire structure. As a result, a great attention has to be paid for good detailing of such joint. The absence of transverse reinforcement in the joint, insufficient development length for the beam reinforcement and the inadequately spliced reinforcement for the column just above the joint can be considered as the most important causes for the failure of the beam–column joint under any unexpected transverse loading on the building. The recent earthquakes revealed the importance of the design of reinforced concrete (RC) structures with ductile behaviour. Ductility can be described as the ability of reinforced concrete cross sections, elements and structures to absorb the large energy released during earthquakes without losing their strength under large amplitude and reversible deformations.***

I. LITERATURE REVIEW

A. Said M. Allam , Hazem M.F. Elbakry , Israa S.E. Arab(2018)

The joints between beams and columns are crucial zones in a reinforced concrete moment resisting frame. The behaviour of such joints greatly influences the strength and ductility of the overall frame. In this research, analysis of three-dimensional numerical models of exterior reinforced concrete beam-column joints under monotonic loading was performed using the finite element ABAQUS package.

Concrete and reinforcing steel material nonlinearities, as well as bond characteristics between reinforcing bars and surrounding concrete were considered in the analysis. A parametric study involving thirty joint models was conducted to examine the influence of concrete strength, column axial load, joint stirrups and shape of the beam top reinforcement on the beam tip load and displacement capacities.

The concrete dimensions and reinforcement of the studied models were chosen to ensure the occurrence of joint failure. The use of straight bars for beam top reinforcement resulted in generally lower ultimate loads than those obtained with L- and U-shaped bars. Similar joint behavior was demonstrated for the cases of using Land U-shaped beam top reinforcement.

B. Jawed Qureshi, Dr. Yashida Nadir, Shaise K John(2020)

Presented are test results from eight full-scale pultruded FRP beam-to-column joint subassemblies. Moment-rotation behaviour, failure modes, joint classification and load enhancement due to semi rigid end conditions are discussed. Testing is divided in two series: first had FRP beam-to-steel column joints and second FRP beam-to-FRP column joints. The joints are either flange and web cleated or flange cleated only.

The connection method is bolting or 'hybrid' combining both bolting and bonding. Test parameters include effects of adhesive bonding, column flexibility, cleat material and joint configuration. Bolted and bonded joints not only increased moment resistance but stiffness as well. Using steel cleats instead of FRP resulted in a 50% increase in the moment resistance. Four failure modes, shear-out failure, adhesive debonding with shear-out failure, tensile tearing of the column flanges from the web and de lamination cracking of cleats were observed. Use of adhesive increased both moment capacity and rotational stiffness, but it reduced the maximum rotation capacity. Bolted and bonded joints failed in a brittle manner due to adhesive failing in tension and shear, and the failure transferring to the bolted region. There was 60% increase in moment capacity for FRP beam-to-steel column joints and 20% for FRP beam-to-FRP column joints. While industry practice of using adhesive alongside bolting should be continued, any improvement in either moment or rotational stiffness should be used cautiously.


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To Study Rehabilitation of Old Elevated Water Tank and to Generate Non-Conventional Energy

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Abstract: ***Many of the existing reinforced concrete structures around the world are in urgent need of reinforcement, repair, or reconstruction due to structural damage that occurs for a variety of reasons. The main purpose of this project is the restoration of an existing ancient water tank (Panyacha Khajina) on Old Mahadwar Road in Kolhapur, Maharashtra. Therefore, it is necessary to store water for daily use, the water storage tank should be in good condition and should be repaired if damaged. To find defects in the aquarium, first perform a visual inspection such as photography, checking for the effects of cracks and corrosion, and then inspect the existing aquarium structure, including collecting information on repair work. In this plot, you can install the solar system on top of the existing water tank to increase the efficiency of the plot. Since we are not using a surface water tank, the project's idea is to install solar panels on the roof of the tank to generate electricity so that it can be used for various purposes. Next, you can deploy 113 solar panels and find a total of about 146 units of energy per day. Due to the limitations and impacts of non-renewable energy sources, people around the world need to pay attention to renewable energy sources.***

Keywords: Renewable energy, Non-renewable energy, Restoration, aquarium.

I. INTRODUCTION

Rehabilitation of structure:- Water tanks are used to store daily water, and the water tanks need to be kept in good condition. Elevated water tanks are mainly used for water supply and fire protection. Clean water is essential for a healthy and safe life. Buildings built usually lose their strength as the building ages {i.e: Usually after 20 or 30 years.} Over time, these buildings have lost strength due to material deterioration, unexpected overloads, structural defects, and cracks in water tanks. The structure is weakened due to the reduced durability. If the cause of the cracking or deterioration of the concrete is not identified in time, the aquarium may fall or an accident may occur. Therefore, repair and rehabilitation are very important. That means updating the structure by repairing and repairing the damage. Helps improve structural stability and maintainability. Instead of demolishing or pouring the entire structure, we suggest remediation measures that can re-inspect the structure, be economical and save money. Before trying the repair method, a planned approach is needed to examine the condition of the concrete and rebar. The first step in repair and refurbishment is the correct diagnosis for a successful refurbishment operation. It deals with non-destructive evaluation techniques, laboratory tests and conditions. Commonly used non-destructive testing such as rebound hammer test, ultrasonic pulse velocity test (UPV), pullout test, core test, chloride test, carbonization test, pH measurement, resistance test, differential thermal analysis (DTA), etc.

Non-Conventional Energy:- Not only is energy essential to human survival, its availability is seen as the backbone of national growth and development. India has experienced rapid urbanization and industrialization over the past few decades.

Today, with the declining amount of renewable energy sources, the last decade has become increasingly important to the cost per watt of solar energy devices. It will definitely be economical and will grow as a better technology in terms of cost and applications over the next few years. The earth receives sunlight from above every day (about 1366W). This is an unlimited source of energy available for free. The great advantage of solar energy over other traditional generators is the ability to convert sunlight directly into solar energy using small photovoltaic (PV) solar cells. There has been a lot of research activity to combine solar energy processes by developing high conversions from solar cells / modules / panels. The biggest advantage of solar energy is that it is freely available and available in large quantities to the general public, compared to the prices of various fossil fuels and oils over the last decade. In addition, solar energy requires significantly less personnel than traditional power generation technologies. Unconventional energy has the potential to minimize pollution, reduce global warming, create new industries and jobs, and drive the country towards a cleaner and healthier energy future.


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Design of Water Supply Scheme: A Case Study of Nangargaon Village

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Abstract: ***Design of water supply scheme in around Rural Areas. During classify toward fulfil the water command of the constantly rising population, it is necessary toward supply the plenty with consistent capacity of water through the designed system of pipe. intended for this use the particulars provide via the IPH (Irrigation and Public Health Department) department, the common features of the region similar to in order on the chief water basis, population of the region, insist of water, requirement of the pumps, distribution network and water tanks are essential for efficient design of water distribution system. Water distribution system deals with the supplying of potable water for a village which can be useful for both drinking and wholesome purpose.***

The main stages of distribution system are collection works, transmission works, purification works and distribution works. It includes estimation of future population (population forecasting) by using various methods, layout of pipes and design of valves and joints, finding out the head losses etc.

Keywords: Water supply scheme, Water distribution system, supplying potable water ,QGIS, Watershed management

I. INTRODUCTION

The total volume of water on Earth is estimated at 1.386 billion km³ (333 million cubic miles), with 97.5% being salt water and 2.5% being fresh water. Of the fresh water, only 0.3% is in liquid form on the surface. Providing safe drinking water for the entire population in the country has become a challenging task of the Governments and all Sector Institutions. In order to fulfil the water demand of the continuously growing population we need to provide the sufficient and uniform quantity of water through the designed network of pipes is known as water supply.

In most rural communities in India, the prevailing water supply conditions are very different from urban installations. Usually, the number of people to be served by such a water supply scheme is small and the low population density makes piped distribution of the water costly. On the other hand, rural population often is very poor and, particularly in subsistence farming communities' little money can be raised.

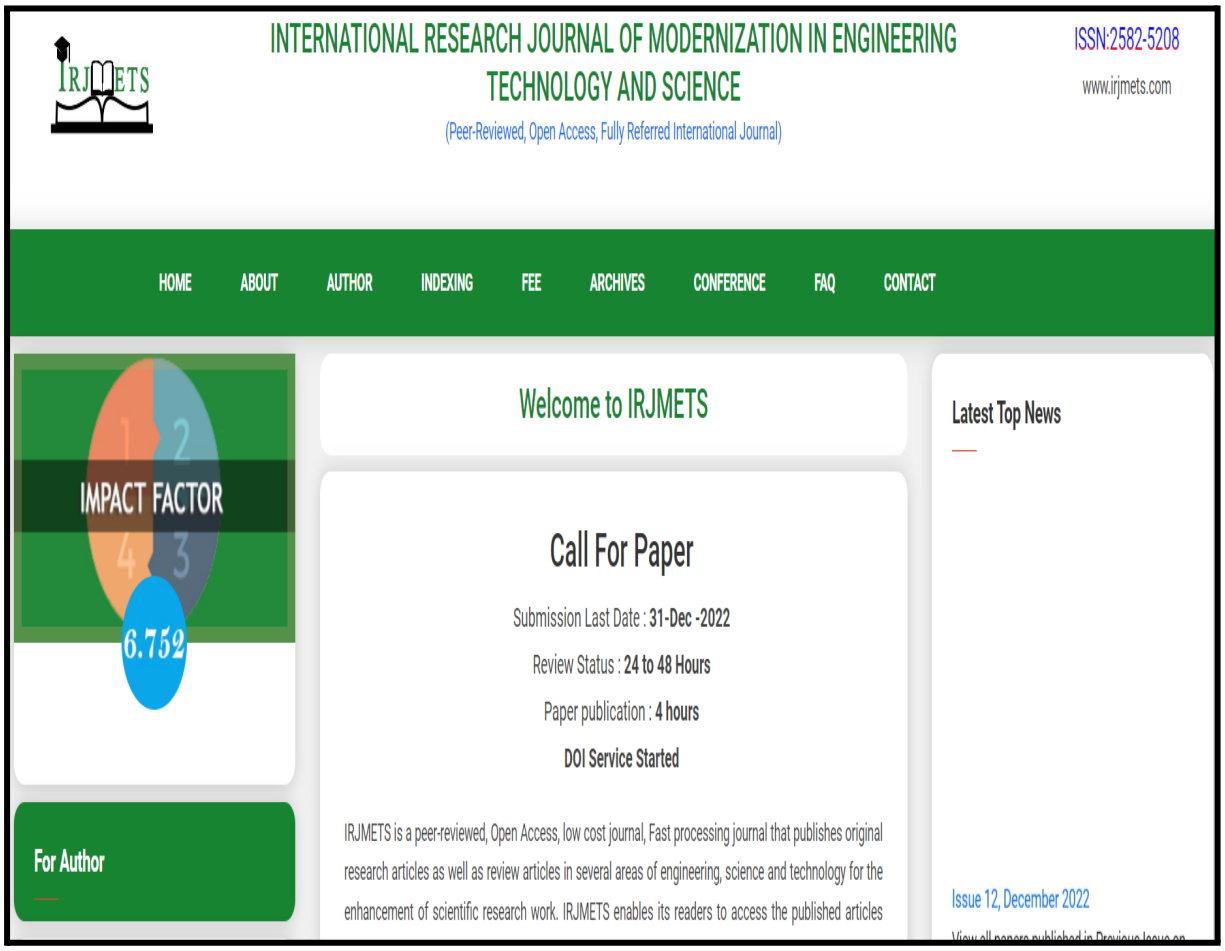
Thus, in providing water supply systems to rural communities, factors such as organization, administration, community involvement and finance are properly blended in order to achieve an economical water supply system.

The general features of the area like information about the main water source, population of the area, demand of water, requirement of the pumps, distribution network and water tanks are essential for efficient design of water distribution system. Existing source of water is limited hence in an order to provide deficient quantity of water by borewell recharging and ground water recharging for spring. Also roof top rain water harvesting potential is estimated. It can be used in case of scarcity.

In the selected Village, there is scarcity of water to overcome this problem we are going to design water supply scheme as well as suggesting measures for recharging of borewell and spring in this area.

II. OBJECTIVES

A. To supply safe and wholesome water to consumers.
B. To study existing water supply arrangement.
C. To estimate the quantity of water required for the users in Selected Village.
D. To estimate the quantity of water available in the selected source.
E. To propose the location of storage tank of required capacity to meet the gap between required water & available water.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ALPHA: THE DESKTOP ASSISTANT

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ABSTRACT

The advancement in technology over time has been unmeasurable. In such an era of advancement if people are still struggling to interact with their machine using various input devices then it's not worth it. For this reason, many voice assistants were developed and are still being improved for better performance and efficiency. The main task of a voice assistant is to minimize the use of input devices like keyboard, mouse, touch pens, etc. This will reduce both the hardware cost and space taken by it. This idea is inspired from 'Jarvis' of the marvel universe movie IRON MAN . The tasks that we perform in our daily life which are majorly common in our everyday use. The motivation behind this is to make our personal life more comfortable along with maintaining the creativity and the productivity in professional life. We worked hard to make this idea turn into a solution or a tool that really helps us in our daily life.

I. INTRODUCTION

Nowadays our life has become smarter and interlinked with technology. We already know some voice assistance like google, Siri, alexa. This project helps you in use some of the desktop features which are Chrome, basic OS handling operations, and controlling the mouse. This project works on voice input and gives output through voice and displays the text on the screen. These personal assistants can be easily configured to perform many of your regular tasks by simply giving voice commands. Google has popularized voice-based search that is a boon for many like senior citizens who are not comfortable using the keyboard. The main agenda of our voice assistance is to make people smart and give instant results through desktop.

II. METHODOLOGY

2.1 Speech Recognition module

Speech recognition is the process of converting spoken words to text. Python supports many speech recognition engines and APIs, including Google Speech Engine, Google Cloud Speech API, Microsoft Bing Voice Recognition and IBM Speech to Text. The system uses Google's online speech recognition for converting speech input to text. The speech input which is obtained from user texts from the specially organized on the computer network server at the information center from the microphone is temporarily stored in the system which is then sent to Google cloud for speech recognition. The equivalent text is then received and fed to the central processor.

2.2 Python Backend

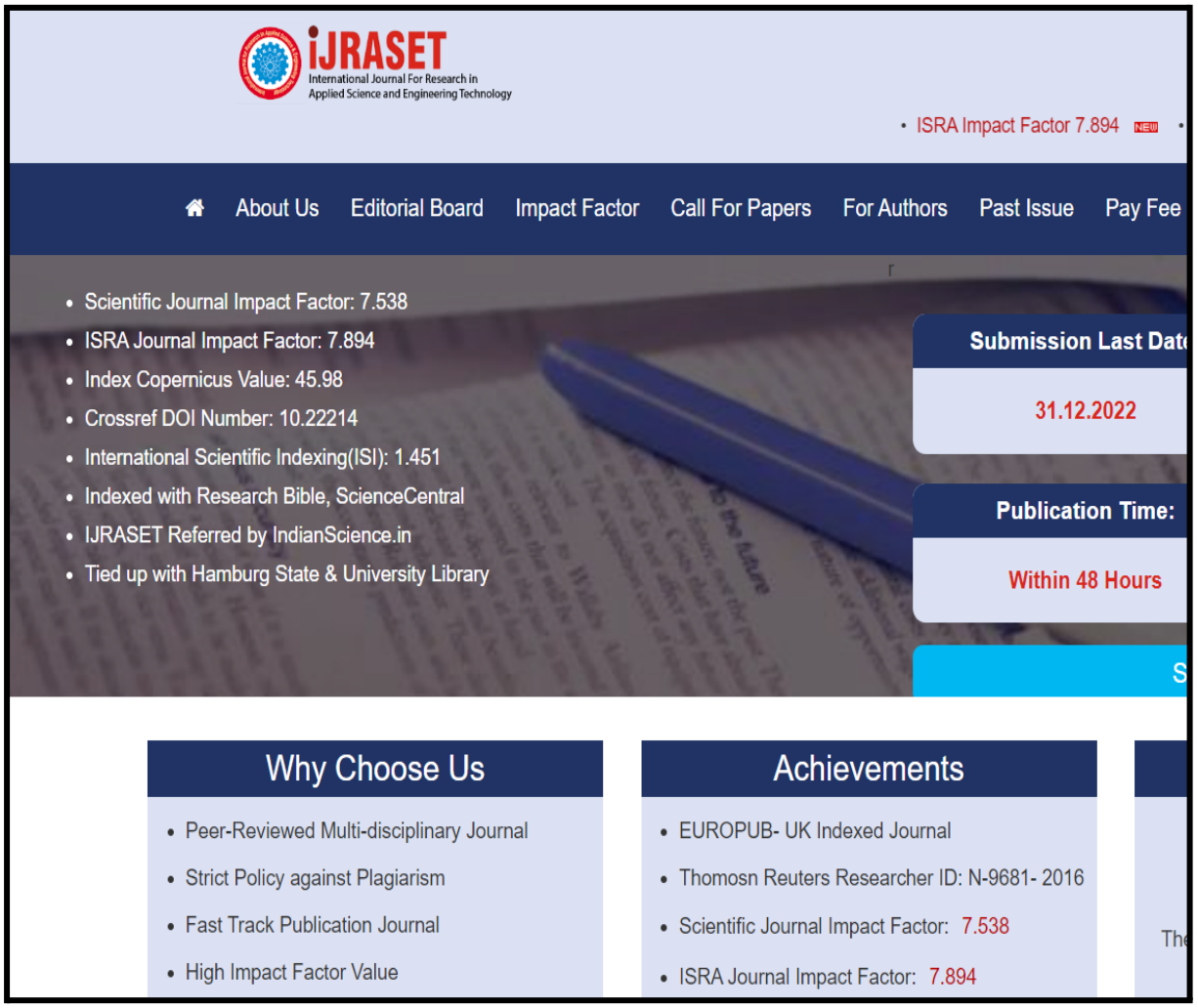
The python backend gets the output from the speech recognition module and then identifies whether the command or the speech output is an API Call and Content Extraction. The output is then sent back to the python backend to give the required output to the user.

2.3 API calls

API stands for Application Programming Interface. An API is a software intermediary that allows two applications to talk with each other. In other words, an API is a messenger that delivers your request to the provider that you're requesting it from and then delivers the response back to you.

2.4 Content Extraction

Content extraction (CE) is the task of automatically extracting structured information from unstructured and/or semi-structured machine-readable documents. In most cases, this activity concerns processing human language texts using natural language processing (NLP). Recent activities in multimedia document processing like automatic annotation and content extraction out of images/audio/video could be seen as context extraction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Feasibility Study of Zero Discharge Concept in Sugar Industry After Anaerobic Treatment: Case Study of Solapur

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Abstract: ***Purification and reutilisation of waste water from different industries is a challenge for a smarter and healthier environment. An important role in Indian economy is played by an agro based industry segment which is nothing but sugar industry. But the effluent from the industry is a proven fact as a threat for environment. Effective waste water management can result in smart and healthy city environment. The treated colored effluent from the industry is not preferred for reuse and recycle, though the other BOD, COD, TDS, TSS, MPN are in permissible limit. Root zone technique is one of the important approaches for, as the process is economical, easy in operation and maintenance. Pilot plant is constructed and executed using a typical species. The intake of treated effluent and the final effluent from root zone technique were collected and tested for various contact hours. To accommodate the massive urbanization it can be used to find smarter ways to reduce expenses, manage complexities that's the treated waste water from industry can serve for following: 1) Gardening 2) Fire Fighting 3) Washing 4) Toilet Flushing etc. For a better and smart management of treated waste.***

Keywords: Agro based industry, sugar industry, colored, root zone technique, species, contact hours.

I. INTRODUCTION

Today, numerous urban areas catch water from encompassing lakes, streams, or supplies, empty a large number of dollars into treating and transporting that water to homes and business, and afterward toss that water after a solitary utilization. In water scarce situations, this "expendable water" methodology is inefficient and dangerous. Over-extraction of surface and groundwater can diminish environment capacity, bring about area subsidence, and fuel clash. It additionally strains open spending plans, diverting stores into water supply extends that would be superfluous with more effective utilization of existing assets.

Vithalrao Shinde Sahakari Sakhar Karakahana Ltd. has initial installed cane crushing capacity of 2500 TCD. Sugar factory was established for manufacturing of crystal sugar by double sulphitation process from sugar cane juice and from 2001-02 cane crushing capacity up to 6000 TCD. Sugar factory shown tremendous enhancement for development in Financial & Educational, Upliftment, & overall progress in rural area. In Maharashtra, Vithalrao Shinde Sahakari Sakhar Karakahana has only the anaerobic digester i.e., (UASB Up flow Anaerobic Sludge Blanket) for treating the effluent. Sugar manufacturing process involves mainly nine stages as mentioned below(1) Cane weighing; (2) Cane handling and preparatory system; (3) Milling system; (4) Juice clarification system; (4) Evaporation; (5) Vacuum pan boiling and crystallization; (6) Curing, Drying, Grading, bagging and warehousing; (7) Final molasses storage; (8) Effluent to make treatment; (9) Cane Weighment System.

Vithalrao Shinde S. S. K. Ltd;
White Sugar Process flow chart


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XGRAPH & GNUPLOT IMPLEMENTATION OF AODV & DSDV ROUTING PROTOCOL IN MANET USING NS2

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Abstract: The Mobile Adhoc Network also called as MANET is basically wireless network without any fixed infrastructure. It has wireless mobile nodes which are randomly moving in given network topology. It supports dynamic topology where set of mobile nodes communicate each other with the help of routing protocols. A routing protocol decides how packets can be forwarded from source node to destination node via some intermediate nodes by distributing routing information to enable best possible route on a computer network. Therefore, routing protocol plays a important role for providing best route between nodes and establish communication within network. In this paper we have evaluated performance of two routing protocols- AODV(Ad-hoc On-demand Distance Vector) & DSDV (Destination-Sequenced Distance-Vector) using NS2.35 based on different network metrics. Also we have implemented Xgraph & Gnuplot utility of NS2.35, which is inbuilt function for plotting graphs.

Index Terms **- MANET, AODV & DSDV**

1. INTRODUCTION :

MANET Wireless ad-hoc networks consist of self- managed autonomous nodes without any fixed infrastructure. They have dynamic topology , that implies nodes can without much of a stretch join or leave the organization at some random moment [6-7]. This makes them very useful in various applications, like in military for connecting soldiers on the battle field and in disaster situation like earthquake for establishing a temporary network in place of a existing network which crash after a disaster. Ad-hoc networks are well suited for region where we want to have temporary network without any fixed infrastructure. Nodes in MANET communicate with each other by forwarding packets within themselves without an infrastructure.

MANET are alluded to be self getting sorted out and arranging remote organization network . For the information exchange purpose, nodes make use of wireless channel & forwards the information. In MANET, every node is acting as host or router that forwards data to other nodes or receives data from other nodes. Here in this type of network scenario if the collector hub is out of inclusion region from the sending hub who is communicating the information , then a routing calculation is constantly expected to figure out the best way between sender node and receiver node so that the packets reaches to its intended destination successfully To Support the process of connectivity & transmission , nodes makes use of routing protocols such as Destination-Sequenced Distance-Vector & Ad-hoc On-Demand Distance Vector [5].

2. ROUTING PROTOCOLS:

Routing is nothing but way of exchanging data from source node to destination node in the network via intermediate node. Due to short range of nodes, the remote divert directing routing channel in MANET is generally executed through multi-hop, where the message is ordinarily sent by the transitional intermediate mobile nodes. The directing conventions that are utilized in MANET characterizes the route and trade the packets in the nodes, from Source node to intended Destination node.

In this paper, we are going to provide brief idea about two basic types of routing protocols in MANET such as Destination-Sequenced Distance-Vector Routing & Ad-hoc On-demand Distance Vector Routing . Also we are going to evaluate performance of these two protocols using Xgraph & Gnuplot utility in NS2.35.


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In the selected Village, there is scarcity of water to overcome this problem we are going to design water supply scheme as well as suggesting measures for recharging of borewell and spring in this area.

II. OBJECTIVES

A. To supply safe and wholesome water to consumers.
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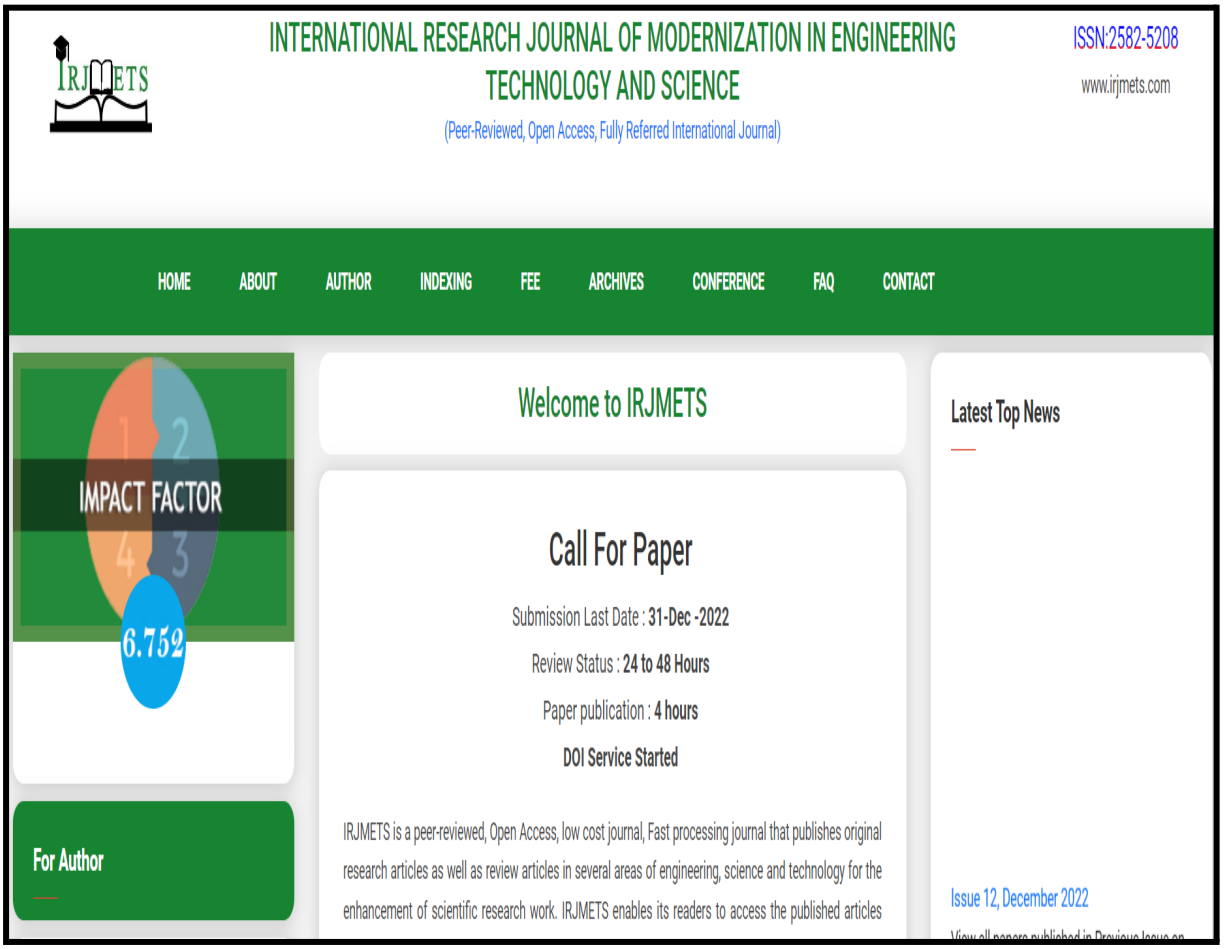
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E-TRAINING AND PLACEMENT MANAGEMENT SYSTEM

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ABSTRACT

The Project Named "E-training and placement management system" is a student, campus Information system. It is a management system which is supported by database. TPO has a major role in every college in which most of the work till now is carried out manually. The goal is to automate the Training and Placement procedure in colleges. This application reduces manual work and maximize the optimization, abstraction and security. This is a web application will help students as well as the administrator authority to carry out each and every activity in campus hiring.

This application can be used for the Training and placement cell of the college to manage the student information regarding placement. Students will able to view eligibility criteria based on their percentage for the up-coming placement drives and they can access technical and Questions regarding particular company. It has the facility to maintain the details of the student and reducing the manual work. Training and Placement Officer (TPO) is able to view information about student and collect their resumes and so many ad-on functionalities. This system can be accessed through proper login.

Keywords: TPO, Placement, Student, College, Application.

I. INTRODUCTION

In today's world everyone wants things to be done in a single click but still Training and Placement system is managed manually. The aim is to automate the Training and Placement management system. This application provides the facility of maintaining the details of the students and also keeping them updated. Administrator in the system is able to search and view information about students. Use of the Internet to enable Placement Coordinator to manage the placement process with the active involvement of the students. This has leads to development of unique web-based training and placement management system for colleges.

E-training and placement management system provides information about placed students, campuses for which students have applied, latest campus drives and the placements they offer so that students may view and assess their opportunities and also, there is a practice test section to make students feel confident about their campus preparations. Online training and placement management system is an application to facilitate students to register and fill the application form. The users can access easily and the data can be retrieved in no time. In the student's login, they can give personal details, educational qualifications, and professional skills. The placement details of the placed students will be provided by the administrator.

The TPO plays an important role in this web application. The department TPO will create student account and provide them login details. Principal will keep record of student's performance in campus and the count of placed and unplaced students so that they can advise students regarding placement and drives. This project will benefit student's participation and interaction with faculty as well as TPO so that colleges can achieve lot of success in placements. This web application lets students to upload their resume, personal and educational details. Through this system students can interact with the help of chat box. During upcoming campuses students can practice aptitude tests assigned by their respective faculties. This system will definitely make training and placement management easier for the TPO, Department coordinators, principal, and faculty and of course students. With this application colleges will have well-developed website to inform their students of new opportunities and how to prepare for campus and get a work integrated learning experience.


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A Literature Review on Beam Column Joints with Different Loading Condition and Methods of Strengthening

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Abstract: ***The beam–column joint is measured as the most important zone in a reinforced concrete moment resisting frame. It is subjected to large forces during earthquake and its behaviour has a major influence on the response of the entire structure. As a result, a great attention has to be paid for good detailing of such joint. The absence of transverse reinforcement in the joint, insufficient development length for the beam reinforcement and the inadequately spliced reinforcement for the column just above the joint can be considered as the most important causes for the failure of the beam–column joint under any unexpected transverse loading on the building. The recent earthquakes revealed the importance of the design of reinforced concrete (RC) structures with ductile behaviour. Ductility can be described as the ability of reinforced concrete cross sections, elements and structures to absorb the large energy released during earthquakes without losing their strength under large amplitude and reversible deformations.***

I. LITERATURE REVIEW

A. Said M. Allam , Hazem M.F. Elbakry , Israa S.E. Arab(2018)

The joints between beams and columns are crucial zones in a reinforced concrete moment resisting frame. The behaviour of such joints greatly influences the strength and ductility of the overall frame. In this research, analysis of three-dimensional numerical models of exterior reinforced concrete beam-column joints under monotonic loading was performed using the finite element ABAQUS package.

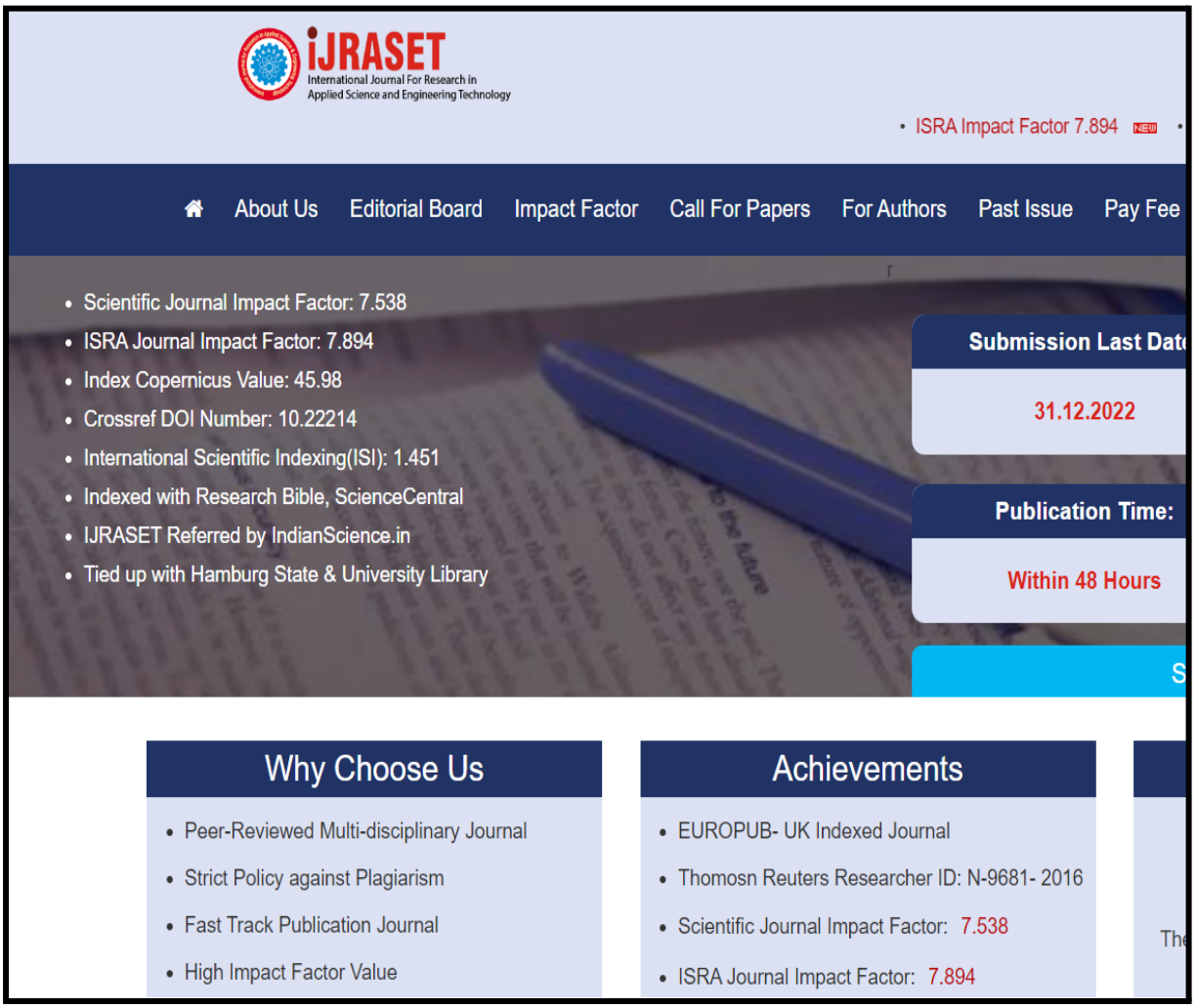
Concrete and reinforcing steel material nonlinearities, as well as bond characteristics between reinforcing bars and surrounding concrete were considered in the analysis. A parametric study involving thirty joint models was conducted to examine the influence of concrete strength, column axial load, joint stirrups and shape of the beam top reinforcement on the beam tip load and displacement capacities.

The concrete dimensions and reinforcement of the studied models were chosen to ensure the occurrence of joint failure. The use of straight bars for beam top reinforcement resulted in generally lower ultimate loads than those obtained with L- and U-shaped bars. Similar joint behavior was demonstrated for the cases of using Land U-shaped beam top reinforcement.

B. Jawed Qureshi, Dr. Yashida Nadir, Shaise K John(2020)

Presented are test results from eight full-scale pultruded FRP beam-to-column joint subassemblies. Moment-rotation behaviour, failure modes, joint classification and load enhancement due to semi rigid end conditions are discussed. Testing is divided in two series: first had FRP beam-to-steel column joints and second FRP beam-to-FRP column joints. The joints are either flange and web cleated or flange cleated only.

The connection method is bolting or 'hybrid' combining both bolting and bonding. Test parameters include effects of adhesive bonding, column flexibility, cleat material and joint configuration. Bolted and bonded joints not only increased moment resistance but stiffness as well. Using steel cleats instead of FRP resulted in a 50% increase in the moment resistance. Four failure modes, shear-out failure, adhesive debonding with shear-out failure, tensile tearing of the column flanges from the web and de lamination cracking of cleats were observed. Use of adhesive increased both moment capacity and rotational stiffness, but it reduced the maximum rotation capacity. Bolted and bonded joints failed in a brittle manner due to adhesive failing in tension and shear, and the failure transferring to the bolted region. There was 60% increase in moment capacity for FRP beam-to-steel column joints and 20% for FRP beam-to-FRP column joints. While industry practice of using adhesive alongside bolting should be continued, any improvement in either moment or rotational stiffness should be used cautiously.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An Evaluation of Road Safety Performance for Selected Road Stretches in Kolhapur City

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Abstract: ***The major cause for global deaths and injuries are mainly due to road crashes. It is worst in developing countries due to rapid and unplanned urbanization. It was estimated in 2010 that about 1, 60,000 persons have died due to road crashes in India. Since, road safety is influenced by many factors it involves complex studies to arrive at the reasons for accidents. As a result the accident study itself remains under estimated in many of the countries specially in developing countries. In recent years several indicators are developed in order to study the factors influencing the accident and based on which the improvement measures can be adopted to reduce accident rate. In the present study two stretches are selected to validate the Road safety Index (RSI) equation and to suggest the improvements to the selected road stretches. Also an analysis is made to check if there is any improvement in the RSI value.***

Keywords: Road safety, WHO, IRC, RSI, Road safety performance

I. INTRODUCTION

Road safety is a multi dimensional issue. In order to improvise the safety of road it incorporates the development and management of road infrastructure, rules and regulations, law enforcement to the road users etc.,. The accident rate has increased rapidly with increase in road network, motorisation and urbanisation in the country. Worldwide, over 1.2 million people are killed in road crashes each year and 20 to 50 million are injured according World health Organisation, 2009. It means that every day around the world, more than 3000 people die from road traffic injury. WHO estimates road accidents will become the world's third leading cause of death by the year 2020. India has a well established road network of about 33 kilometer. At the same time, India has one of the highest accident rates in the world with more than 14 accidents per thousand vehicles every year.

The road safety audit, when used for applications on existing roads is more appropriately termed as RSI. The process is a proven highly cost effective process that assists with production of safe roads.India has the second largest road network in the world with over 3 million km of roads of which 60% are paved. These roads make a vital contribution to India's economy. Road safety is emerging as a major social concern in the country. The statistics with an average mortality rate of 1, 00,000 persons dying in road accidents. India having more than 33 lakh kilometer of well-spread road network. At the same time, India has one of the highest accident rates in the world with more than 14 accidents per thousand vehicles every year, compared to only 6 to 8 accidents per thousand vehicles in developed countries. India accounts for about 10 percent of road accident fatalities worldwide. An estimated 12, 75,000 persons are seriously injured on the road every year. Studies on accidents, the world over, have shown that the human factor is responsible for a majority of accidents. Road Safety is a multi-dimensional issue in order to improve the safety of road; it incorporates the development and management of road infrastructure, rules and regulations, law enforcement to the road users etc.

Kolhapur is the one of the major cities in Maharashtra state. As per report of 2011 censes of Kolhapur city population is 5,49,236 (approximate). The no. of accidents in Kolhapur city increasing day by day is due to increases in population, increase in vehicles registration, increase in road network and rapid urbanization. The no. of accidents due to improper lane changing, prohibitated dangerous passing and merging etc. therefore it is necessary to study the road safety and performance in Kolhapur city.

II. OBJECTIVES

1) Review of current status and literature review and understanding the major causes of accidents of road.
2) To control over the risk involved in operating vehicles.
3) To suggest improvement for safe working of vehicle on road.
4) Detail Study of selected road stretches.


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Identification of flood control measures for Kolhapur city

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Abstract - During the month of July and August 2019 Kolhapur Districts in Krishna Sub- basin experienced extreme floods for long duration. According to reports 16.5 lakh cr economical losses had been reported. According to reports climatic changes is one of the factors for nature calamities over the years, indiscriminate pursuit of so-called development had reduced the capacity of catchment area to hold, store and absorb the rainwater. [1]

In this research, the area considered is around 10 sq.km (Appro.) which includes the villages as; Nigave Dumala, Vadanage, Kasaba Bawada. To come up with achievable adaptive measure with watershed management for this we did Topographical. Analysis for our sub-watershed by using Curve Number Method.

Completion of mathematical check of proposed hypothetical work and hydrological data and analysis of data pre-solution and post-solution. On the bases of the study we suggested some watershed structures like movable barrier, farm pond and percolation pond. Depending on capacity of the structure we can reduce 43% of total discharge from the sub-water shed which is causing flood near Kolhapur city.

Key Words: flood control measures, Curve Number method.

1.INTRODUCTION

During the months of July and August 2019, Sangli and Kolhapur districts in Krishna sub basins experienced extreme floods for long durations. Heavy losses to life, property and crops etc. had been reported. Different opinions at various levels were put forth concerning these flood situations faced by Sangli and Kolhapur districts. Floods of 2005 and 2006 were also noteworthy. However, the 2019-2021 flood situations were comparatively much more severe which lasted more than a week and losses experienced were also on a higher scale. Itis therefore necessary to find out different ways to counter flooding, in-depth analysis and other reasons behind the flood situation to prevent the repetition of such unfortunate events in future.

Flood devastation is increasing in this region due to rapid increase in the population and human activities. In 2005, 57 villages were heavily affected by flood and 27 villages were completely marooned by flood water. During that period 40,000 people were shifted to relief camps and 26 human casualties were reported. Agricultural area of 520 sq.km of Kolhapur district was also inundated as pr state government's report. [2]

In the 2019, India faced a series of floods that affected over thirteen states in late July and early August 2019 due to excessive rains. At least 200 people died and about a million people were displaced. Karnataka and Maharashtra were the most severely affected states. People died but many were rescued with the help of the Indian Navy. It was the heaviest monsoon in the last 25 years. More than 1600 people died between June to October 2019. Thirteen states of India were affected by floods due to heavy rains in July–September 2019. News reports later stated that there were 500 people missing and 1000 were killed with many people losing their homes.

According to preliminary estimates, losses to public and private properties are over RS.4,000 crore (RS.53,88,00,000). Losses due to flooding in Kolhapur and Sangli are 700 crore (RS.94,290,000). Electricity infrastructure worth 1,200 crore (RS.16,16,40,000) has been damaged, while damage to roads and bridges is over 1,500 crore (RS.202,050,000). Crops across 338,000 hectares have been damaged in western Maharashtra and Konkan. The state relief is expected to cover all affected elements by widening the scope of the set norms. Maharashtra is now dealing with twin disasters, i.e., the floods in the midst of the ongoing pandemic. The floods have posed a grave threat to the healthcare of patients who are being treated in hospitals. [1]

At present, 133 villages are prone to flooding. The problems related to flooding have greatly increased in the Panchganga basin and there is need ofeffective modelling to understand the problem and to mitigate its disastrous effects. The main limitation of flood risk analysis is the generation of accurate terrain information and identification of inundated areas during the event. Cartosat stereodata with 2.5 m resolution can only provide vertical accuracy up to 6 m. The main objective of the present study is to identify potential flood risk in the areas of Panchganga river using Curve Number Method.

According to reports climatic change is one of the factors for natural calamities, over the years indiscriminate pursuit of so-called development has reduced the capacity of catchment areas to hold, store and absorb rain water. Climatological Changes and Abnormal Rainfall Pattern Formation of severe cyclones over Arabian sea leading to persistent and simultaneous occurrence over large spatial areas, of heavy precipitation in short duration, in the catchments of river Krishna and its tributaries, both in dam and free catchments. Absence of flood absorption capacities in reservoir planning of existing dams. At the time of project planning, the reservoirs are never planned with the provision of


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Design of Water Supply Scheme: A Case Study of Nangargaon Village

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Abstract: ***Design of water supply scheme in around Rural Areas. During classify toward fulfil the water command of the constantly rising population, it is necessary toward supply the plenty with consistent capacity of water through the designed system of pipe. intended for this use the particulars provide via the IPH (Irrigation and Public Health Department) department, the common features of the region similar to in order on the chief water basis, population of the region, insist of water, requirement of the pumps, distribution network and water tanks are essential for efficient design of water distribution system. Water distribution system deals with the supplying of potable water for a village which can be useful for both drinking and wholesome purpose.***

The main stages of distribution system are collection works, transmission works, purification works and distribution works. It includes estimation of future population (population forecasting) by using various methods, layout of pipes and design of valves and joints, finding out the head losses etc.

Keywords: Water supply scheme, Water distribution system, supplying potable water ,QGIS, Watershed management

I. INTRODUCTION

The total volume of water on Earth is estimated at 1.386 billion km³ (333 million cubic miles), with 97.5% being salt water and 2.5% being fresh water. Of the fresh water, only 0.3% is in liquid form on the surface. Providing safe drinking water for the entire population in the country has become a challenging task of the Governments and all Sector Institutions. In order to fulfil the water demand of the continuously growing population we need to provide the sufficient and uniform quantity of water through the designed network of pipes is known as water supply.

In most rural communities in India, the prevailing water supply conditions are very different from urban installations. Usually, the number of people to be served by such a water supply scheme is small and the low population density makes piped distribution of the water costly. On the other hand, rural population often is very poor and, particularly in subsistence farming communities' little money can be raised.

Thus, in providing water supply systems to rural communities, factors such as organization, administration, community involvement and finance are properly blended in order to achieve an economical water supply system.

The general features of the area like information about the main water source, population of the area, demand of water, requirement of the pumps, distribution network and water tanks are essential for efficient design of water distribution system. Existing source of water is limited hence in an order to provide deficient quantity of water by borewell recharging and ground water recharging for spring. Also roof top rain water harvesting potential is estimated. It can be used in case of scarcity.

In the selected Village, there is scarcity of water to overcome this problem we are going to design water supply scheme as well as suggesting measures for recharging of borewell and spring in this area.

II. OBJECTIVES

A. To supply safe and wholesome water to consumers.
B. To study existing water supply arrangement.
C. To estimate the quantity of water required for the users in Selected Village.
D. To estimate the quantity of water available in the selected source.
E. To propose the location of storage tank of required capacity to meet the gap between required water & available water.


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A Literature Review On Use Of Rice Husk Ash As Cementation Material

Mr.Satish S.Kotwal[1], Mr.Vidyanand S.Kadam[2], Mr. Mayur M. More[3], Mr Ananda S Patil[4], Mr.Nitish A.Mohite[5], Mr.Mane V. V[6]

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Abstract: ***The cement has been the major building material in today's construction because of its binding and high compressive strength properties. Beside this, it also causes release of greenhouse gas carbon dioxide which causes global warming and other environmental issues. Researches were done to decrease the carbon footprint and use of waste material to be used in construction. The rice husk ash is waste materials which have shown promising results if replaced with cement in production of concrete. Previous researches done by researcher's shows that it enhances the corrosion resistance capability of produced concrete with RHA and some increase in compressive strength. In this literature review is related to increase in strength of concrete depending on age of concrete & percentage of RHA addition. Keywords: Rice Husk ash, Waste materials, Concrete, Cementation material, RHA, compressive strength***

I. INTRODUCTION

Concrete is widely and globally used throughout the history of humankind. Concrete is a mixture of sand and coarse aggregate combined together by a hardened paste of cement and water. The increased use of concrete is going to grow the demand for its ingredients' resources (cement, sand, and gravel). The high rate of concrete constituents is increasing rapidly and hence there is a requirement for an unconventional material that is low-cost and readily presented that will also give a similar or greater strength when used for concrete. Cement is one of the constituents of concrete which is costly and its production releases large amounts of CO_2 during its manufacturing. Manufacturing one tonne of cement releases about one tonne of CO_2 in the atmosphere while 1.6 tonnes of natural resources are required to produce about one tonne of cement. In many studies the cement is partially replaced by agricultural/industrial waste such as glass powder, sugar cane bagasse ash, rice husk ash (RHA), blast furnace slag, maize cob ash, millet husk ash, fly ash etc. in order to reduce cost, waste and CO_2 emissions while these resources are easily available.

II. OBJECTIVE

The main objective of this paper is to study Rice Husk Ash (RHA), it's property and potential to be used as a replacement of cement in concrete production

III. LITERATURE REVIEW

Following are the critical literature reviews on various papers based on experimental research work on use of Rice Husk Ash.D.V.

A. Reddy, Ph. D, P.E. and Marcelina Alvarez, B.SFourth LACCEI International Latin American and Caribbean Conference for Engineering and Technology (2006)

Detailed, the use of RHA will not only concrete production of better quality and low cost, but also reduce carbon dioxide (CO2) emissions from cement production. The partial replacement of cement by RHA will result in lower energy consumption associated with cement production. The potential market for rice husk energy systems and equipment has been studied by Velupillai et al. (1997). The reference also addresses economic development, urbanization, living standards, stricter environmental regulations, and consolidation in the rice milling industry is the reduction of certain traditional uses balls, and creating new opportunities for the use of the envelope. He discusses the potential use of rice husk Ash (RHA) as a cementations material in concrete mixes. RHA is produced by burning rice husk which is a by-product of rice milling. The ash content is about 18 to 22% by weight of rice hulls. Research has shown that concrete containing RHA in partial replacement of cement concentrations of 10% to 20% by weight of cement has superior performance characteristics compared to normal concrete. In addition, the use of ORS would result in a reduction in the cost of concrete construction, and the reduction of the greenhouse effect on the environment.


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Performance Evaluation of Laboratory Scale Vegetated Vermifilter for Domestic Wastewater: Case Study of Kolhapur

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Abstract -
Earthworm bodies have been shown to act as biofilters and remove BOD, COD, TDS, and TSS through common mechanisms of uptake, biodegradation, and absorption from the body wall. Two laboratory-scale vertical vermifilters will be developed. One uses only canna indica and filter media, and the other uses canna indica and (earthworms) with the filter media. The experimental phase will last 72 hours. Various parameters such as BOD, COD, pH, turbidity, canna indica growth, bed clogging. Organic waste management is increasingly concerned due to unsustainable disposal practices. Sewage treatment facilities are designed to treat wastewater in a way that produces safe wastewater. However, one of the by-products, sewage sludge, is rich in pathogens because it is disposed of in landfills and used as fertilizer on farms. Sustainability can be achieved by composting organic matter with vermi. This includes accelerating nutrient circulation through a closed-loop system, leading waste to productive end applications. Earthworm composting and worm filtration are natural waste management processes that rely on the use of worms to convert organic waste into stable soil concentrates. We investigated the fate of filter materials and microbial communities during the vermifiltering process for a month while treating concentrated miscellaneous wastewater. Two filters are filled with 10 cm, the first layer from the bottom is coarse aggregate (size 20 mm, height 6 mm), the second layer is (size 10 mm, height 4 mm), and the third layer is charcoal (size). 25mm, height 4mm), 4th layer is sand (size 4mm, height 4mm), 5th layer is soil, last layer is freeboard.

Key Words:Domestic Wastewater, Vermifilter, COD, BOD, Canna Indica, Eisenia Fetida.

1. INTRODUCTION:

According to UNICEF, an estimated 564 million people defecate in India, which is almost half of the world's population. According to the latest Indian Census, 49.84% of people practice open turf, while 47% of Indian households have a household toilet. Most Indian cities are only partially drained. A whopping 48% of urban households in India rely on on-site facilities (mainly septic tanks and pit latrines) to meet their hygiene needs. This reliance on on-site hygiene naturally increases with rapid population growth and urbanization. Therefore, at the national level, it is clear to focus on a sustainable service delivery approach to hygiene. Indian cities often face the challenge of connecting suburbs and underdeveloped parts of the city to existing sanitation systems (such as sewage treatment facilities). In such cases, the decentralized treatment approach is a logical solution. In this system, wastewater is treated at or near a water source and rather than being connected to a centralized sewage system, a relatively small amount is discharged from a single house to the entire community nearby. This system offers the advantage of recycling and reusing wastewater in that particular area. The current take-make-up-disposal approach can be counteracted by this system, which complements the concept of "circular economy". The amount of miscellaneous wastewater produced at home varies greatly from about 15 liters per person per day in poor households to 100 liters per person per day. Of the 100%, 25% is black water, 75% is reclaimed water, and can rise to 90% in drywall. Reclaimed water accounts for 69% of domestic wastewater. To recycle and reuse such a large amount of wastewater, treatment options should be considered. One such solution is decentralized processing, which allows the community to focus on the most pressing processing needs, while allowing smaller design flows and waste areas. As a result, the financial burden is concentrated on individual properties rather than the entire district. For rural or remote residential or community applications, decentralized systems have


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Design of Water Supply Scheme: A Case Study of Nangargaon Village

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Abstract: ***Design of water supply scheme in around Rural Areas. During classify toward fulfil the water command of the constantly rising population, it is necessary toward supply the plenty with consistent capacity of water through the designed system of pipe. intended for this use the particulars provide via the IPH (Irrigation and Public Health Department) department, the common features of the region similar to in order on the chief water basis, population of the region, insist of water, requirement of the pumps, distribution network and water tanks are essential for efficient design of water distribution system. Water distribution system deals with the supplying of potable water for a village which can be useful for both drinking and wholesome purpose.***

The main stages of distribution system are collection works, transmission works, purification works and distribution works. It includes estimation of future population (population forecasting) by using various methods, layout of pipes and design of valves and joints, finding out the head losses etc.

Keywords: Water supply scheme, Water distribution system, supplying potable water ,QGIS, Watershed management

I. INTRODUCTION

The total volume of water on Earth is estimated at 1.386 billion km³ (333 million cubic miles), with 97.5% being salt water and 2.5% being fresh water. Of the fresh water, only 0.3% is in liquid form on the surface. Providing safe drinking water for the entire population in the country has become a challenging task of the Governments and all Sector Institutions. In order to fulfil the water demand of the continuously growing population we need to provide the sufficient and uniform quantity of water through the designed network of pipes is known as water supply.

In most rural communities in India, the prevailing water supply conditions are very different from urban installations. Usually, the number of people to be served by such a water supply scheme is small and the low population density makes piped distribution of the water costly. On the other hand, rural population often is very poor and, particularly in subsistence farming communities' little money can be raised.

Thus, in providing water supply systems to rural communities, factors such as organization, administration, community involvement and finance are properly blended in order to achieve an economical water supply system.

The general features of the area like information about the main water source, population of the area, demand of water, requirement of the pumps, distribution network and water tanks are essential for efficient design of water distribution system. Existing source of water is limited hence in an order to provide deficient quantity of water by borewell recharging and ground water recharging for spring. Also roof top rain water harvesting potential is estimated. It can be used in case of scarcity.

In the selected Village, there is scarcity of water to overcome this problem we are going to design water supply scheme as well as suggesting measures for recharging of borewell and spring in this area.

II. OBJECTIVES

A. To supply safe and wholesome water to consumers.
B. To study existing water supply arrangement.
C. To estimate the quantity of water required for the users in Selected Village.
D. To estimate the quantity of water available in the selected source.
E. To propose the location of storage tank of required capacity to meet the gap between required water & available water.


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Comparative Study Of Performance Of 15% Neem Biodiesel On Single Cylinder Computerized Diesel Engine For Different Compression Ratio and Load

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Abstract : Requirement of diesel fuel is increasing day by day due to its advantages like low cost, high efficiency, low brake specific fuel consumption. In India about two third of petroleum products imported from oil and petroleum exporting countries. Diesel is non renewable source of energy and they are depleting with time in nature also causes pollution issues. So it is necessary to replace Diesel fuel by biodiesel which will gives contribution to improve Indian economy by use of biodiesel blends. Biodiesel is a renewable, biodegradable fuel manufactured domestically from vegetable oils, animal fats, or recycled restaurant grease. .It is also necessary to study the performance and emission of different biodiesel and find out the alternative for the diesel fuel. This paper focuses on performance of 15% neem biodiesel for different Compression ratio and load to find out optimum condition for performance of diesel engine. Performance of engine is measured by break power, break thermal efficiency, break specific fuel combustion and volumetric efficiency.

IndexTerms - Neem biodiesel, brake thermal efficiency, compression ratio, Computerized diesel engine.

1.INTRODUCTION

Energy is the basic need for economic development of any country and the largest source of energy in India after coal is Petroleum diesel. Fossil fuels are non-renewable sources where stored energy is released due to combustion, such as coal, natural gas, petroleum and they account for almost 80% of energy used worldwide. In India about two third of which is imported from oil and petroleum exporting countries. High dependence on imported fuel and due to frequent fluctuations in petroleum prices has made Indian economy insecure. This rapid development has necessitated the equal rapid expansion of transport sector (rail, surface, air and sea) which entail the use of internal combustion engines. Compression ignition engines namely diesel engines are supposed to be the most efficient engines as they achieve better fuel economy, lower carbon dioxides emissions than conventional spark ignition engines fuelled by gasoline. However, these engines tend to be more costly and emit high level of nitrogen oxides and particulate matter and are the major contributor to air pollution as it is extensively used in public transport and goods transport . *Biodiesel*, based on vegetable oils and animal fats is an alternate fuel which is considered safe. Biodiesel is a renewable, biodegradable fuel manufactured domestically from vegetable oils, animal fats, or recycled restaurant grease.. Biodiesel is a liquid fuel often referred to as B100 or neat biodiesel in its pure, unblended form. Like petroleum diesel, biodiesel is used to fuel compression-ignition engines. Blends of biodiesel and conventional hydrocarbon-based diesel are most commonly distributed for use in the retail diesel fuel marketplace. Much of the world uses a system known as the "B" factor to state the amount of biodiesel in any fuel mix.


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Seismic Behaviour and Design of RC Shear Wall using ETABS software

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Abstract: ***The present paper shows seismic behavior of building under the action of earthquake load [bhuj earthquake] by performing time history analysis. Nowadays buildings with shear walls are more popular than buildings without shear wall in earthquake prone areas due to its resistance during earthquake. In this project G+10 RCC building is considered for the structural analysis for zone III and suitable load combination. The purpose of this study is to find the prime location of shear wall and then investigate the effectiveness of best shear wall for the RCC structure. The structure is analyzed for earthquake in the type of structural system using ETABS software. Wall which is mainly designed to resist lateral forces in its own plane is called shear wall Shear wall are mainly flexural membrane which are specially designed to resist lateral forces which are caused by seismic forces and other forces. Shear wall starts from foundation level and should be continuous throughout of the building.***
Keywords: RCC building, ETABS, Time History Analysis, Shear wall, Seismic analysis

I. INTRODUCTION

A shear wall is a structural component provided to the multi storied or tall buildings or ordinary buildings in high wind velocity areas. These walls usually begin from the foundation level, along the length and width of buildings. Their thickness can be above 150 mm or below 400 mm in tall buildings and they are like vertical-oriented wide beams that carry the earthquake load towards the foundation.

Shear wall is a concrete wall made to resist lateral forces acting on tall buildings. Shear walls are vertical elements of the horizontal force resisting system. When shear walls are designed and constructed properly, they will have the strength and stiffness to resist the horizontal forces. Properly designed and detailed buildings with shear walls have exhibited very good performance during the past earthquakes. Just like reinforced concrete (RC) beams and columns, RC shear walls also perform much better if designed to be ductile. Overall geometric proportions of the wall, types and amount of reinforcement, and connection with the other elements in the building help in improving the ductility of walls.

In building construction, a rigid vertical diaphragm capable of transferring lateral forces from exterior walls, floors, and roofs to the ground foundation in a direction parallel to their planes. Examples are the reinforced-concrete wall or vertical truss. Lateral forces caused by wind, earthquake, and uneven settlement loads, in addition to the weight of structure and occupants, create powerful twisting (torsional) forces. These forces can literally tear (shear) a building apart. Reinforcing a frame by attaching or placing a rigid wall inside it maintains the shape of the frame and prevents rotation at the joints. Shear walls are especially important in high-rise buildings subject to lateral wind and seismic forces.

Need of the Shear Wall:

While columns and load-bearing walls keep buildings standing up, carrying the compression load of the structure down to its foundation, the shear wall is what keeps structures from blowing over, resisting the lateral forces of wind and seismic activity. Almost all houses have external shear walls, but internal shear walls are typically found only in larger houses and high-rise buildings subject to lateral winds and seismic forces. The tall the building, the greater the need for internal shear walls and a lateral force resisting system. Most homes and buildings in high-wind and earthquake-prone regions require exterior shear walls. However, larger houses and high-rise structures also need interior shear walls to protect against lateral wind and seismic forces.

II. OBJECTIVES

1) To model and analyze G+10 frame structure having different location of shear wall in the structure using ETABS software.
2) Comparative study of seismic behaviour of building with shear wall and without shear wall by performing nonlinear time history analysis.
3) To find lateral displacement in x and y direction
4) To study the displacement of the building.


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Behaviour of Compressive Strength of M20 Grade Concrete using Ruber Crumb, Magnetized and Normal Water

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***Abstract*— Water plays an important role in the concrete preparation. It plays an important role in workability and strength of concrete. A new technology known as magnetized water is used to increase the workability and strength of concrete. At the same time, after pure water is magnetized, we should inject immediately the magnetized water into the sample baths of the instrument to measure their properties because the time, in which the magnetization effect can be retained, is finite. The experiments should be repeated about 2-3 times for their credibility. Hence normal water concrete with crumb rubber shows nearly same strength compared to normal water concrete, so waste can put to work. This paper aims to comparative study of M20 grade concrete with Crumb Rubber and magnetic water. The literature study showed that there can be improvement in compressive strength of concrete when it is used with magnetic water. the results here show the compressive strength of concrete can be considerably increased.**

Keywords: Magnetise Water, Rubber Crumb, Compressive strength.

INTRODUCTION

In this research study, the effect of magnetized water on compressive strength of concrete was studied, in order to obtain operative concrete with high resistance and at a lower cost. Data were collected from previous studies and research. Compressive strength tests were carried out and it was found out that concrete produced by the magnetic technology is easy to operate without affecting the compressive resistance of concrete. It was also found that magnetized water increases the compressive resistance of concrete while cement is reduced up to 25%. As considering the crumb rubber huge amount of waste can be brought into converting factor as comparing on going global wastages solution. Urbanization and the day-to-day exponential increase in the number of automobiles has increased the usage of rubber. As an attempt to reuse this waste, many experimental studies are carried out using it as a filler material in concrete industry. Water is an important ingredient of concrete as it actively participates in chemical reaction with cement. Since it helps to form strength giving cement gel, the quantity and quality of water is required to be studied. So, there is a need to do the necessary research on modification of water to increase the strength and quality of concrete.

Hence, it can be expected that partial replacement of natural fine aggregates with recycled fine aggregates might not decrease the strength to a larger extent. To overcome above problems with recycled aggregates concrete, now a day's electromagnetic water is used to manufacture the concrete by some researchers. Electro-magnetic water concrete has been recently developed by using electromagnetically treated water instead of potable water in concrete. Based on the literature survey, it is observed that, electro-magnetized water is found to increase compressive strength of concrete by 20% to 30% Based on the above scenario and literature study, present study is focused on the experimental investigation to check the effect of crumb rubber on concrete, comparison of normal water concrete and electromagnetic water concrete. Ultimately, it is expected that the use of rubber crumb and magnetic water will help to increase the strength of concrete and enhance the re-centring ability of concrete. Recycled fine aggregates will be used for re-using the demolished waste. While


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A Literature Review On Use Of Rice Husk Ash As Cementation Material

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Abstract: ***The cement has been the major building material in today's construction because of its binding and high compressive strength properties. Beside this, it also causes release of greenhouse gas carbon dioxide which causes global warming and other environmental issues. Researches were done to decrease the carbon footprint and use of waste material to be used in construction. The rice husk ash is waste materials which have shown promising results if replaced with cement in production of concrete. Previous researches done by researcher's shows that it enhances the corrosion resistance capability of produced concrete with RHA and some increase in compressive strength. In this literature review is related to increase in strength of concrete depending on age of concrete & percentage of RHA addition. Keywords: Rice Husk ash, Waste materials, Concrete, Cementation material, RHA, compressive strength***

I. INTRODUCTION

Concrete is widely and globally used throughout the history of humankind. Concrete is a mixture of sand and coarse aggregate combined together by a hardened paste of cement and water. The increased use of concrete is going to grow the demand for its ingredients' resources (cement, sand, and gravel). The high rate of concrete constituents is increasing rapidly and hence there is a requirement for an unconventional material that is low-cost and readily presented that will also give a similar or greater strength when used for concrete. Cement is one of the constituents of concrete which is costly and its production releases large amounts of CO_2 during its manufacturing. Manufacturing one tonne of cement releases about one tonne of CO_2 in the atmosphere while 1.6 tonnes of natural resources are required to produce about one tonne of cement. In many studies the cement is partially replaced by agricultural/industrial waste such as glass powder, sugar cane bagasse ash, rice husk ash (RHA), blast furnace slag, maize cob ash, millet husk ash, fly ash etc. in order to reduce cost, waste and CO_2 emissions while these resources are easily available.

II. OBJECTIVE

The main objective of this paper is to study Rice Husk Ash (RHA), it's property and potential to be used as a replacement of cement in concrete production

III. LITERATURE REVIEW

Following are the critical literature reviews on various papers based on experimental research work on use of Rice Husk Ash.D.V.

A. Reddy, Ph. D, P.E. and Marcelina Alvarez, B.SFourth LACCEI International Latin American and Caribbean Conference for Engineering and Technology (2006)

Detailed, the use of RHA will not only concrete production of better quality and low cost, but also reduce carbon dioxide (CO2) emissions from cement production. The partial replacement of cement by RHA will result in lower energy consumption associated with cement production. The potential market for rice husk energy systems and equipment has been studied by Velupillai et al. (1997). The reference also addresses economic development, urbanization, living standards, stricter environmental regulations, and consolidation in the rice milling industry is the reduction of certain traditional uses balls, and creating new opportunities for the use of the envelope. He discusses the potential use of rice husk Ash (RHA) as a cementations material in concrete mixes. RHA is produced by burning rice husk which is a by-product of rice milling. The ash content is about 18 to 22% by weight of rice hulls. Research has shown that concrete containing RHA in partial replacement of cement concentrations of 10% to 20% by weight of cement has superior performance characteristics compared to normal concrete. In addition, the use of ORS would result in a reduction in the cost of concrete construction, and the reduction of the greenhouse effect on the environment.


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Feasibility Study of Zero Discharge Concept in Sugar Industry After Anaerobic Treatment: Case Study of Solapur

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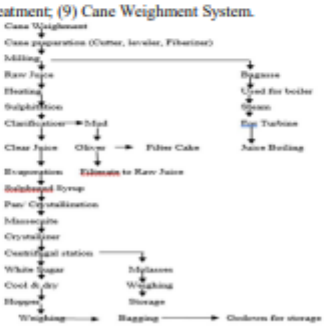
Abstract: ***Purification and reutilisation of waste water from different industries is a challenge for a smarter and healthier environment. An important role in Indian economy is played by an agro based industry segment which is nothing but sugar industry. But the effluent from the industry is a proven fact as a threat for environment. Effective waste water management can result in smart and healthy city environment. The treated colored effluent from the industry is not preferred for reuse and recycle, though the other BOD, COD, TDS, TSS, MPN are in permissible limit. Root zone technique is one of the important approaches for, as the process is economical, easy in operation and maintenance. Pilot plant is constructed and executed using a typical species. The intake of treated effluent and the final effluent from root zone technique were collected and tested for various contact hours. To accommodate the massive urbanization it can be used to find smarter ways to reduce expenses, manage complexities that's the treated waste water from industry can serve for following: 1) Gardening 2) Fire Fighting 3) Washing 4) Toilet Flushing etc. For a better and smart management of treated waste.***

Keywords: Agro based industry, sugar industry, colored, root zone technique, species, contact hours.

I. INTRODUCTION

Today, numerous urban areas catch water from encompassing lakes, streams, or supplies, empty a large number of dollars into treating and transporting that water to homes and business, and afterward toss that water after a solitary utilization. In water scarce situations, this "expendable water" methodology is inefficient and dangerous. Over-extraction of surface and groundwater can diminish environment capacity, bring about area subsidence, and fuel clash. It additionally strains open spending plans, diverting stores into water supply extends that would be superfluous with more effective utilization of existing assets.

Vithalrao Shinde Sahakari Sakhar Karakahana Ltd. has initial installed cane crushing capacity of 2500 TCD. Sugar factory was established for manufacturing of crystal sugar by double sulphitation process from sugar cane juice and from 2001-02 cane crushing capacity up to 6000 TCD. Sugar factory shown tremendous enhancement for development in Financial & Educational, Upliftment, & overall progress in rural area. In Maharashtra, Vithalrao Shinde Sahakari Sakhar Karakahana has only the anaerobic digester i.e., (UASB Up flow Anaerobic Sludge Blanket) for treating the effluent. Sugar manufacturing process involves mainly nine stages as mentioned below(1) Cane weighing; (2) Cane handling and preparatory system; (3) Milling system; (4) Juice clarification system; (4) Evaporation; (5) Vacuum pan boiling and crystallization; (6) Curing, Drying, Grading, bagging and warehousing; (7) Final molasses storage; (8) Effluent to make treatment; (9) Cane Weighment System.



Vithalrao Shinde S. S. K. Ltd;
White Sugar Process flow chart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Challenges of Energy and Environmental Sustainability

Abhijeet Pabale, Deepak Paithankar, Jitendra G. Shinde, Gajendra J. Pol, Avadhut R. Jadhav, M. Ramaganesh

Abstract

The concepts of energy and climate, as well as the related security issue, are evaluated by taking into account authentic advancement processes, notably the concept of maintainability, and the multi-layered construction of the potential of supportability is revealed in this study. The majority of the supportability issue revolves around how long the usage can be sustained for under normal asset constraints. This current situation, which draws supportability closer merely from a financial standpoint, has resulted in the link of manageability with monetary development/advancement, and maintainability and effectiveness are assessed together. Indeed, the biological economy concept has emerged as a response to the current situation. This study investigates the concerns of energy and climate management. It also investigates the relationship between energy use and GDP, the conflict between energy and climate, and the general public's future energy demands.

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Study of public attitude towards household waste management in selected rural area in Kolhapur District.

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ABSTRACT: One of the frightening issues in modern life is the collection and disposal of municipal solid trash. The ineffective and improper methods of disposing of solid waste cause aesthetic blights, serious risks to public health, such as air pollution, accident risks, and an increase in rodent and insect vectors of disease, have a negative impact on land values, cause public nuisance, and otherwise obstruct community life and development. Unattended SW invites rodents, flies, and other animals, which in turn spread infections. Wet SW also decomposes and emits a foul stench. Health issues result from these unclean circumstances. Therefore, it's critical to manage SW to reduce its negative effects on human health and the environment. Development of understanding is required for solid waste management (SWM).Solid garbage dumped at a dump site serves as a current indicator.Current research focuses on the scientific assessment of public opinion regarding solid waste management and investigation of potential solutions which are practicable in local context. The rural community of Kandalgaon in the Maharashtra state, close to Kolhapur, was chosen as the subject region for this investigation. The primary accomplishments of the programme are the survey of village residents, calculation of the potential for tentative garbage creation, and exploration of alternative solid waste management options.

Key words: Solid Waste, Dumping, Surveying, Landfilling

1. INTRODUCTION:

The collection and disposal of municipal solid waste is one of the grave issues facing modern society. The amount of municipal solid garbage produced every day in the nation is estimated to be over 100000 MT. Solid trash should be disposed of properly and efficiently to avoid major risks. The solid trash dumped at the disposal site serves as a current indicator. It is crucial to do this by reducing the amount of solid waste that is produced. Some disease and


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A Literature Review on Beam Column Joints with Different Loading Condition and Methods of Strengthening

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Abstract: ***The beam–column joint is measured as the most important zone in a reinforced concrete moment resisting frame. It is subjected to large forces during earthquake and its behaviour has a major influence on the response of the entire structure. As a result, a great attention has to be paid for good detailing of such joint. The absence of transverse reinforcement in the joint, insufficient development length for the beam reinforcement and the inadequately spliced reinforcement for the column just above the joint can be considered as the most important causes for the failure of the beam–column joint under any unexpected transverse loading on the building. The recent earthquakes revealed the importance of the design of reinforced concrete (RC) structures with ductile behaviour. Ductility can be described as the ability of reinforced concrete cross sections, elements and structures to absorb the large energy released during earthquakes without losing their strength under large amplitude and reversible deformations.***

I. LITERATURE REVIEW

A. Said M. Allam , Hazem M.F. Elbakry , Israa S.E. Arab(2018)

The joints between beams and columns are crucial zones in a reinforced concrete moment resisting frame. The behaviour of such joints greatly influences the strength and ductility of the overall frame. In this research, analysis of three-dimensional numerical models of exterior reinforced concrete beam-column joints under monotonic loading was performed using the finite element ABAQUS package.

Concrete and reinforcing steel material nonlinearities, as well as bond characteristics between reinforcing bars and surrounding concrete were considered in the analysis. A parametric study involving thirty joint models was conducted to examine the influence of concrete strength, column axial load, joint stirrups and shape of the beam top reinforcement on the beam tip load and displacement capacities.

The concrete dimensions and reinforcement of the studied models were chosen to ensure the occurrence of joint failure. The use of straight bars for beam top reinforcement resulted in generally lower ultimate loads than those obtained with L- and U-shaped bars. Similar joint behavior was demonstrated for the cases of using Land U-shaped beam top reinforcement.

B. Jawed Qureshi, Dr. Yashida Nadir, Shaise K John(2020)

Presented are test results from eight full-scale pultruded FRP beam-to-column joint subassemblies. Moment-rotation behaviour, failure modes, joint classification and load enhancement due to semi rigid end conditions are discussed. Testing is divided in two series: first had FRP beam-to-steel column joints and second FRP beam-to-FRP column joints. The joints are either flange and web cleated or flange cleated only.

The connection method is bolting or 'hybrid' combining both bolting and bonding. Test parameters include effects of adhesive bonding, column flexibility, cleat material and joint configuration. Bolted and bonded joints not only increased moment resistance but stiffness as well. Using steel cleats instead of FRP resulted in a 50% increase in the moment resistance. Four failure modes, shear-out failure, adhesive debonding with shear-out failure, tensile tearing of the column flanges from the web and de lamination cracking of cleats were observed. Use of adhesive increased both moment capacity and rotational stiffness, but it reduced the maximum rotation capacity. Bolted and bonded joints failed in a brittle manner due to adhesive failing in tension and shear, and the failure transferring to the bolted region. There was 60% increase in moment capacity for FRP beam-to-steel column joints and 20% for FRP beam-to-FRP column joints. While industry practice of using adhesive alongside bolting should be continued, any improvement in either moment or rotational stiffness should be used cautiously.


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Seismic Behaviour and Design of RC Shear Wall using ETABS software

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Abstract: ***The present paper shows seismic behavior of building under the action of earthquake load [bhuj earthquake] by performing time history analysis. Nowadays buildings with shear walls are more popular than buildings without shear wall in earthquake prone areas due to its resistance during earthquake. In this project G+10 RCC building is considered for the structural analysis for zone III and suitable load combination. The purpose of this study is to find the prime location of shear wall and then investigate the effectiveness of best shear wall for the RCC structure. The structure is analyzed for earthquake in the type of structural system using ETABS software. Wall which is mainly designed to resist lateral forces in its own plane is called shear wall Shear wall are mainly flexural membrane which are specially designed to resist lateral forces which are caused by seismic forces and other forces. Shear wall starts from foundation level and should be continuous throughout of the building.***
Keywords: RCC building, ETABS, Time History Analysis, Shear wall, Seismic analysis

I. INTRODUCTION

A shear wall is a structural component provided to the multi storied or tall buildings or ordinary buildings in high wind velocity areas. These walls usually begin from the foundation level, along the length and width of buildings. Their thickness can be above 150 mm or below 400 mm in tall buildings and they are like vertical-oriented wide beams that carry the earthquake load towards the foundation.

Shear wall is a concrete wall made to resist lateral forces acting on tall buildings. Shear walls are vertical elements of the horizontal force resisting system. When shear walls are designed and constructed properly, they will have the strength and stiffness to resist the horizontal forces. Properly designed and detailed buildings with shear walls have exhibited very good performance during the past earthquakes. Just like reinforced concrete (RC) beams and columns, RC shear walls also perform much better if designed to be ductile. Overall geometric proportions of the wall, types and amount of reinforcement, and connection with the other elements in the building help in improving the ductility of walls.

In building construction, a rigid vertical diaphragm capable of transferring lateral forces from exterior walls, floors, and roofs to the ground foundation in a direction parallel to their planes. Examples are the reinforced-concrete wall or vertical truss. Lateral forces caused by wind, earthquake, and uneven settlement loads, in addition to the weight of structure and occupants, create powerful twisting (torsional) forces. These forces can literally tear (shear) a building apart. Reinforcing a frame by attaching or placing a rigid wall inside it maintains the shape of the frame and prevents rotation at the joints. Shear walls are especially important in high-rise buildings subject to lateral wind and seismic forces.

Need of the Shear Wall:

While columns and load-bearing walls keep buildings standing up, carrying the compression load of the structure down to its foundation, the shear wall is what keeps structures from blowing over, resisting the lateral forces of wind and seismic activity. Almost all houses have external shear walls, but internal shear walls are typically found only in larger houses and high-rise buildings subject to lateral winds and seismic forces. The tall the building, the greater the need for internal shear walls and a lateral force resisting system. Most homes and buildings in high-wind and earthquake-prone regions require exterior shear walls. However, larger houses and high-rise structures also need interior shear walls to protect against lateral wind and seismic forces.

II. OBJECTIVES

1) To model and analyze G+10 frame structure having different location of shear wall in the structure using ETABS software.
2) Comparative study of seismic behaviour of building with shear wall and without shear wall by performing nonlinear time history analysis.
3) To find lateral displacement in x and y direction
4) To study the displacement of the building.


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XGRAPH & GNUPLOT IMPLEMENTATION OF AODV & DSDV ROUTING PROTOCOL IN MANET USING NS2

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Abstract: The Mobile Adhoc Network also called as MANET is basically wireless network without any fixed infrastructure. It has wireless mobile nodes which are randomly moving in given network topology. It supports dynamic topology where set of mobile nodes communicate each other with the help of routing protocols. A routing protocol decides how packets can be forwarded from source node to destination node via some intermediate nodes by distributing routing information to enable best possible route on a computer network. Therefore, routing protocol plays a important role for providing best route between nodes and establish communication within network. In this paper we have evaluated performance of two routing protocols- AODV(Ad-hoc On-demand Distance Vector) & DSDV (Destination-Sequenced Distance-Vector) using NS2.35 based on different network metrics. Also we have implemented Xgraph & Gnuplot utility of NS2.35, which is inbuilt function for plotting graphs.

Index Terms **- MANET, AODV & DSDV**

1. INTRODUCTION :

MANET Wireless ad-hoc networks consist of self- managed autonomous nodes without any fixed infrastructure. They have dynamic topology , that implies nodes can without much of a stretch join or leave the organization at some random moment [6-7]. This makes them very useful in various applications, like in military for connecting soldiers on the battle field and in disaster situation like earthquake for establishing a temporary network in place of a existing network which crash after a disaster. Ad-hoc networks are well suited for region where we want to have temporary network without any fixed infrastructure. Nodes in MANET communicate with each other by forwarding packets within themselves without an infrastructure.

MANET are alluded to be self getting sorted out and arranging remote organization network . For the information exchange purpose, nodes make use of wireless channel & forwards the information. In MANET, every node is acting as host or router that forwards data to other nodes or receives data from other nodes. Here in this type of network scenario if the collector hub is out of inclusion region from the sending hub who is communicating the information , then a routing calculation is constantly expected to figure out the best way between sender node and receiver node so that the packets reaches to its intended destination successfully To Support the process of connectivity & transmission , nodes makes use of routing protocols such as Destination-Sequenced Distance-Vector & Ad-hoc On-Demand Distance Vector [5].

2. ROUTING PROTOCOLS:

Routing is nothing but way of exchanging data from source node to destination node in the network via intermediate node. Due to short range of nodes, the remote divert directing routing channel in MANET is generally executed through multi-hop, where the message is ordinarily sent by the transitional intermediate mobile nodes. The directing conventions that are utilized in MANET characterizes the route and trade the packets in the nodes, from Source node to intended Destination node.

In this paper, we are going to provide brief idea about two basic types of routing protocols in MANET such as Destination-Sequenced Distance-Vector Routing & Ad-hoc On-demand Distance Vector Routing . Also we are going to evaluate performance of these two protocols using Xgraph & Gnuplot utility in NS2.35.


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Identification of flood control measures for Kolhapur city

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Abstract - During the month of July and August 2019 Kolhapur Districts in Krishna Sub- basin experienced extreme floods for long duration. According to reports 16.5 lakh cr economical losses had been reported. According to reports climatic changes is one of the factors for nature calamities over the years, indiscriminate pursuit of so-called development had reduced the capacity of catchment area to hold, store and absorb the rainwater. [1]

In this research, the area considered is around 10 sq.km (Appro.) which includes the villages as; Nigave Dumala, Vadanage, Kasaba Bawada. To come up with achievable adaptive measure with watershed management for this we did Topographical. Analysis for our sub-watershed by using Curve Number Method.

Completion of mathematical check of proposed hypothetical work and hydrological data and analysis of data pre-solution and post-solution. On the bases of the study we suggested some watershed structures like movable barrier, farm pond and percolation pond. Depending on capacity of the structure we can reduce 43% of total discharge from the sub-water shed which is causing flood near Kolhapur city.

Key Words: flood control measures, Curve Number method.

1.INTRODUCTION

During the months of July and August 2019, Sangli and Kolhapur districts in Krishna sub basins experienced extreme floods for long durations. Heavy losses to life, property and crops etc. had been reported. Different opinions at various levels were put forth concerning these flood situations faced by Sangli and Kolhapur districts. Floods of 2005 and 2006 were also noteworthy. However, the 2019-2021 flood situations were comparatively much more severe which lasted more than a week and losses experienced were also on a higher scale. Itis therefore necessary to find out different ways to counter flooding, in-depth analysis and other reasons behind the flood situation to prevent the repetition of such unfortunate events in future.

Flood devastation is increasing in this region due to rapid increase in the population and human activities. In 2005, 57 villages were heavily affected by flood and 27 villages were completely marooned by flood water. During that period 40,000 people were shifted to relief camps and 26 human casualties were reported. Agricultural area of 520 sq.km of Kolhapur district was also inundated as pr state government's report. [2]

In the 2019, India faced a series of floods that affected over thirteen states in late July and early August 2019 due to excessive rains. At least 200 people died and about a million people were displaced. Karnataka and Maharashtra were the most severely affected states. People died but many were rescued with the help of the Indian Navy. It was the heaviest monsoon in the last 25 years. More than 1600 people died between June to October 2019. Thirteen states of India were affected by floods due to heavy rains in July–September 2019. News reports later stated that there were 500 people missing and 1000 were killed with many people losing their homes.

According to preliminary estimates, losses to public and private properties are over RS.4,000 crore (RS.53,88,00,000). Losses due to flooding in Kolhapur and Sangli are 700 crore (RS.94,290,000). Electricity infrastructure worth 1,200 crore (RS.16,16,40,000) has been damaged, while damage to roads and bridges is over 1,500 crore (RS.202,050,000). Crops across 338,000 hectares have been damaged in western Maharashtra and Konkan. The state relief is expected to cover all affected elements by widening the scope of the set norms. Maharashtra is now dealing with twin disasters, i.e., the floods in the midst of the ongoing pandemic. The floods have posed a grave threat to the healthcare of patients who are being treated in hospitals. [1]

At present, 133 villages are prone to flooding. The problems related to flooding have greatly increased in the Panchganga basin and there is need ofeffective modelling to understand the problem and to mitigate its disastrous effects. The main limitation of flood risk analysis is the generation of accurate terrain information and identification of inundated areas during the event. Cartosat stereodata with 2.5 m resolution can only provide vertical accuracy up to 6 m. The main objective of the present study is to identify potential flood risk in the areas of Panchganga river using Curve Number Method.

According to reports climatic change is one of the factors for natural calamities, over the years indiscriminate pursuit of so-called development has reduced the capacity of catchment areas to hold, store and absorb rain water. Climatological Changes and Abnormal Rainfall Pattern Formation of severe cyclones over Arabian sea leading to persistent and simultaneous occurrence over large spatial areas, of heavy precipitation in short duration, in the catchments of river Krishna and its tributaries, both in dam and free catchments. Absence of flood absorption capacities in reservoir planning of existing dams. At the time of project planning, the reservoirs are never planned with the provision of


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Comparative Study Of Performance Of 15% Neem Biodiesel On Single Cylinder Computerized Diesel Engine For Different Compression Ratio and Load

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Abstract : Requirement of diesel fuel is increasing day by day due to its advantages like low cost, high efficiency, low brake specific fuel consumption. In India about two third of petroleum products imported from oil and petroleum exporting countries. Diesel is non renewable source of energy and they are depleting with time in nature also causes pollution issues. So it is necessary to replace Diesel fuel by biodiesel which will gives contribution to improve Indian economy by use of biodiesel blends. Biodiesel is a renewable, biodegradable fuel manufactured domestically from vegetable oils, animal fats, or recycled restaurant grease. .It is also necessary to study the performance and emission of different biodiesel and find out the alternative for the diesel fuel. This paper focuses on performance of 15% neem biodiesel for different Compression ratio and load to find out optimum condition for performance of diesel engine. Performance of engine is measured by break power, break thermal efficiency, break specific fuel combustion and volumetric efficiency.

IndexTerms - Neem biodiesel, brake thermal efficiency, compression ratio, Computerized diesel engine.

1.INTRODUCTION

Energy is the basic need for economic development of any country and the largest source of energy in India after coal is Petroleum diesel. Fossil fuels are non-renewable sources where stored energy is released due to combustion, such as coal, natural gas, petroleum and they account for almost 80% of energy used worldwide. In India about two third of which is imported from oil and petroleum exporting countries. High dependence on imported fuel and due to frequent fluctuations in petroleum prices has made Indian economy insecure. This rapid development has necessitated the equal rapid expansion of transport sector (rail, surface, air and sea) which entail the use of internal combustion engines. Compression ignition engines namely diesel engines are supposed to be the most efficient engines as they achieve better fuel economy, lower carbon dioxides emissions than conventional spark ignition engines fuelled by gasoline. However, these engines tend to be more costly and emit high level of nitrogen oxides and particulate matter and are the major contributor to air pollution as it is extensively used in public transport and goods transport . *Biodiesel*, based on vegetable oils and animal fats is an alternate fuel which is considered safe. Biodiesel is a renewable, biodegradable fuel manufactured domestically from vegetable oils, animal fats, or recycled restaurant grease.. Biodiesel is a liquid fuel often referred to as B100 or neat biodiesel in its pure, unblended form. Like petroleum diesel, biodiesel is used to fuel compression-ignition engines. Blends of biodiesel and conventional hydrocarbon-based diesel are most commonly distributed for use in the retail diesel fuel marketplace. Much of the world uses a system known as the "B" factor to state the amount of biodiesel in any fuel mix.


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A Literature Review On Use Of Rice Husk Ash As Cementation Material

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Abstract: ***The cement has been the major building material in today's construction because of its binding and high compressive strength properties. Beside this, it also causes release of greenhouse gas carbon dioxide which causes global warming and other environmental issues. Researches were done to decrease the carbon footprint and use of waste material to be used in construction. The rice husk ash is waste materials which have shown promising results if replaced with cement in production of concrete. Previous researches done by researcher's shows that it enhances the corrosion resistance capability of produced concrete with RHA and some increase in compressive strength. In this literature review is related to increase in strength of concrete depending on age of concrete & percentage of RHA addition. Keywords: Rice Husk ash, Waste materials, Concrete, Cementation material, RHA, compressive strength***

I. INTRODUCTION

Concrete is widely and globally used throughout the history of humankind. Concrete is a mixture of sand and coarse aggregate combined together by a hardened paste of cement and water. The increased use of concrete is going to grow the demand for its ingredients' resources (cement, sand, and gravel). The high rate of concrete constituents is increasing rapidly and hence there is a requirement for an unconventional material that is low-cost and readily presented that will also give a similar or greater strength when used for concrete. Cement is one of the constituents of concrete which is costly and its production releases large amounts of CO_2 during its manufacturing. Manufacturing one tonne of cement releases about one tonne of CO_2 in the atmosphere while 1.6 tonnes of natural resources are required to produce about one tonne of cement. In many studies the cement is partially replaced by agricultural/industrial waste such as glass powder, sugar cane bagasse ash, rice husk ash (RHA), blast furnace slag, maize cob ash, millet husk ash, fly ash etc. in order to reduce cost, waste and CO_2 emissions while these resources are easily available.

II. OBJECTIVE

The main objective of this paper is to study Rice Husk Ash (RHA), it's property and potential to be used as a replacement of cement in concrete production

III. LITERATURE REVIEW

Following are the critical literature reviews on various papers based on experimental research work on use of Rice Husk Ash.D.V.

A. Reddy, Ph. D, P.E. and Marcelina Alvarez, B.SFourth LACCEI International Latin American and Caribbean Conference for Engineering and Technology (2006)

Detailed, the use of RHA will not only concrete production of better quality and low cost, but also reduce carbon dioxide (CO2) emissions from cement production. The partial replacement of cement by RHA will result in lower energy consumption associated with cement production. The potential market for rice husk energy systems and equipment has been studied by Velupillai et al. (1997). The reference also addresses economic development, urbanization, living standards, stricter environmental regulations, and consolidation in the rice milling industry is the reduction of certain traditional uses balls, and creating new opportunities for the use of the envelope. He discusses the potential use of rice husk Ash (RHA) as a cementations material in concrete mixes. RHA is produced by burning rice husk which is a by-product of rice milling. The ash content is about 18 to 22% by weight of rice hulls. Research has shown that concrete containing RHA in partial replacement of cement concentrations of 10% to 20% by weight of cement has superior performance characteristics compared to normal concrete. In addition, the use of ORS would result in a reduction in the cost of concrete construction, and the reduction of the greenhouse effect on the environment.


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Performance Evaluation of Laboratory Scale Vegetated Vermifilter for Domestic Wastewater: Case Study of Kolhapur

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Abstract -
Earthworm bodies have been shown to act as biofilters and remove BOD, COD, TDS, and TSS through common mechanisms of uptake, biodegradation, and absorption from the body wall. Two laboratory-scale vertical vermifilters will be developed. One uses only canna indica and filter media, and the other uses canna indica and (earthworms) with the filter media. The experimental phase will last 72 hours. Various parameters such as BOD, COD, pH, turbidity, canna indica growth, bed clogging. Organic waste management is increasingly concerned due to unsustainable disposal practices. Sewage treatment facilities are designed to treat wastewater in a way that produces safe wastewater. However, one of the by-products, sewage sludge, is rich in pathogens because it is disposed of in landfills and used as fertilizer on farms. Sustainability can be achieved by composting organic matter with vermi. This includes accelerating nutrient circulation through a closed-loop system, leading waste to productive end applications. Earthworm composting and worm filtration are natural waste management processes that rely on the use of worms to convert organic waste into stable soil concentrates. We investigated the fate of filter materials and microbial communities during the vermifiltering process for a month while treating concentrated miscellaneous wastewater. Two filters are filled with 10 cm, the first layer from the bottom is coarse aggregate (size 20 mm, height 6 mm), the second layer is (size 10 mm, height 4 mm), and the third layer is charcoal (size). 25mm, height 4mm), 4th layer is sand (size 4mm, height 4mm), 5th layer is soil, last layer is freeboard.

Key Words:Domestic Wastewater, Vermifilter, COD, BOD, Canna Indica, Eisenia Fetida.

1. INTRODUCTION:

According to UNICEF, an estimated 564 million people defecate in India, which is almost half of the world's population. According to the latest Indian Census, 49.84% of people practice open turf, while 47% of Indian households have a household toilet. Most Indian cities are only partially drained. A whopping 48% of urban households in India rely on on-site facilities (mainly septic tanks and pit latrines) to meet their hygiene needs. This reliance on on-site hygiene naturally increases with rapid population growth and urbanization. Therefore, at the national level, it is clear to focus on a sustainable service delivery approach to hygiene. Indian cities often face the challenge of connecting suburbs and underdeveloped parts of the city to existing sanitation systems (such as sewage treatment facilities). In such cases, the decentralized treatment approach is a logical solution. In this system, wastewater is treated at or near a water source and rather than being connected to a centralized sewage system, a relatively small amount is discharged from a single house to the entire community nearby. This system offers the advantage of recycling and reusing wastewater in that particular area. The current take-make-up-disposal approach can be counteracted by this system, which complements the concept of "circular economy". The amount of miscellaneous wastewater produced at home varies greatly from about 15 liters per person per day in poor households to 100 liters per person per day. Of the 100%, 25% is black water, 75% is reclaimed water, and can rise to 90% in drywall. Reclaimed water accounts for 69% of domestic wastewater. To recycle and reuse such a large amount of wastewater, treatment options should be considered. One such solution is decentralized processing, which allows the community to focus on the most pressing processing needs, while allowing smaller design flows and waste areas. As a result, the financial burden is concentrated on individual properties rather than the entire district. For rural or remote residential or community applications, decentralized systems have


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ROAD INTERSECTION RE-DESIGN

Bhokare Pooja A [1], Figueredo Priya K. [2], Mohite Nitish A [3] Nikam Saurabh. R [4], Kamble Sushant. P. [5], Kamble Suraj. B [6], Padalkar Satyajeet. S. [7] ThombareDiptesh D [8]

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Abstract: This project evaluates issues connected with vehicular movement moving through urban road at intersection. In cities like Kolhapur, which facing many problems such as frequent occurrence of traffic Congestion which result in delay, loss of time, increasing fuel consumption, increasing noise pollution and frequent interruption in traffic flow. Maulicha Putla is one of the busiest intersection in Kolhapur. This intersection faces many problems such as to traffic, collision of vehicles, long queue of number of vehicles due to traffic jam is created improper handling of traffic in peak hour. Improper location of central island (Maulicha Putla) causes there is no use of central island, due to this improper flow of traffic created. Vegetable Market, Bus stand, petrol pump are near to intersection due to this the abundant traffic is approaching to the intersection, so various problems created at intersection. Aim of this is to study of traffic problems rotary intersection at Maulicha Putla, which include site investigation (Pilot survey), measurement present geometry of intersection, followed by traffic volume count which is based onvideo graphic method, data collected at peak hours and volume conversion into PCU value (Passenger Car Unit).

Key words: Central island, peak hour, congestion, flow rate, traffic volume, capacity

1. INTRODUCTION:

Population in the India is increasing tremendously and this is leading to traffic problem as, all people nowadays have started purchasing their own vehicles. This has led the city to be congested on road and on intersection. The traffic at the maulicha putla intersection coming from six roads such as Udyam Nagar Road A, Shahu mill Road B, Rajarampuri1 Road C (one way) road towards intersection, Rajarampuri2 Road D, Ciber Road E, Pratibha Nagar road F. In that the three major roads which have the abundant traffic observed i.e Road A, B, E Along with the Public transport runs the private transport whose number is increasing day by day. Flow of traffic on lane. The study area is within the Rajarampuri Road area of Kolhapur City. Kolhapur is one of the cities of Maharashtra having area 66.82 km2 with population 635000 (census 2022). Growth in percentage of vehicle in 2015-16 (9.06%), 2016-17 (31.54%),2017-18(18%). The rapid growth of transportation activities causing acute traffic problem particularly at intersection due to mix complex flow pattern. It is important to design regulation system for this rotary because efficiency of operation, safety, speed, capacity is directly


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Study of public attitude towards household waste management in selected rural area in Kolhapur District.

Bhokare Pooja A [1], Figueredo Priya K [2], Mohite Nitish A [3], Bhurale. Shubham. P [4], Shaikh. Sohil. K [5], Sutar Narpat B [6], Sutar Rushabh. J. [7], Tepugade Ganesh B [8]

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ABSTRACT: One of the frightening issues in modern life is the collection and disposal of municipal solid trash. The ineffective and improper methods of disposing of solid waste cause aesthetic blights, serious risks to public health, such as air pollution, accident risks, and an increase in rodent and insect vectors of disease, have a negative impact on land values, cause public nuisance, and otherwise obstruct community life and development. Unattended SW invites rodents, flies, and other animals, which in turn spread infections. Wet SW also decomposes and emits a foul stench. Health issues result from these unclean circumstances. Therefore, it's critical to manage SW to reduce its negative effects on human health and the environment. Development of understanding is required for solid waste management (SWM).Solid garbage dumped at a dump site serves as a current indicator.Current research focuses on the scientific assessment of public opinion regarding solid waste management and investigation of potential solutions which are practicable in local context. The rural community of Kandalgaon in the Maharashtra state, close to Kolhapur, was chosen as the subject region for this investigation. The primary accomplishments of the programme are the survey of village residents, calculation of the potential for tentative garbage creation, and exploration of alternative solid waste management options.

Key words: Solid Waste, Dumping, Surveying, Landfilling

1. INTRODUCTION:

The collection and disposal of municipal solid waste is one of the grave issues facing modern society. The amount of municipal solid garbage produced every day in the nation is estimated to be over 100000 MT. Solid trash should be disposed of properly and efficiently to avoid major risks. The solid trash dumped at the disposal site serves as a current indicator. It is crucial to do this by reducing the amount of solid waste that is produced. Some disease and


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An Evaluation of Road Safety Performance for Selected Road Stretches in Kolhapur City

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Abstract: ***The major cause for global deaths and injuries are mainly due to road crashes. It is worst in developing countries due to rapid and unplanned urbanization. It was estimated in 2010 that about 1, 60,000 persons have died due to road crashes in India. Since, road safety is influenced by many factors it involves complex studies to arrive at the reasons for accidents. As a result the accident study itself remains under estimated in many of the countries specially in developing countries. In recent years several indicators are developed in order to study the factors influencing the accident and based on which the improvement measures can be adopted to reduce accident rate. In the present study two stretches are selected to validate the Road safety Index (RSI) equation and to suggest the improvements to the selected road stretches. Also an analysis is made to check if there is any improvement in the RSI value.***
Keywords: Road safety, WHO, IRC, RSI, Road safety performance

I. INTRODUCTION

Road safety is a multi dimensional issue. In order to improvise the safety of road it incorporates the development and management of road infrastructure, rules and regulations, law enforcement to the road users etc.,. The accident rate has increased rapidly with increase in road network, motorisation and urbanisation in the country. Worldwide, over 1.2 million people are killed in road crashes each year and 20 to 50 million are injured according World health Organisation, 2009. It means that every day around the world, more than 3000 people die from road traffic injury. WHO estimates road accidents will become the world's third leading cause of death by the year 2020. India has a well established road network of about 33 kilometer. At the same time, India has one of the highest accident rates in the world with more than 14 accidents per thousand vehicles every year.

The road safety audit, when used for applications on existing roads is more appropriately termed as RSI. The process is a proven highly cost effective process that assists with production of safe roads.India has the second largest road network in the world with over 3 million km of roads of which 60% are paved. These roads make a vital contribution to India's economy. Road safety is emerging as a major social concern in the country. The statistics with an average mortality rate of 1, 00,000 persons dying in road accidents. India having more than 33 lakh kilometer of well-spread road network. At the same time, India has one of the highest accident rates in the world with more than 14 accidents per thousand vehicles every year, compared to only 6 to 8 accidents per thousand vehicles in developed countries. India accounts for about 10 percent of road accident fatalities worldwide. An estimated 12, 75,000 persons are seriously injured on the road every year. Studies on accidents, the world over, have shown that the human factor is responsible for a majority of accidents. Road Safety is a multi-dimensional issue in order to improve the safety of road; it incorporates the development and management of road infrastructure, rules and regulations, law enforcement to the road users etc.

Kolhapur is the one of the major cities in Maharashtra state. As per report of 2011 censes of Kolhapur city population is 5,49,236 (approximate). The no. of accidents in Kolhapur city increasing day by day is due to increases in population, increase in vehicles registration, increase in road network and rapid urbanization. The no. of accidents due to improper lane changing, prohibitated dangerous passing and merging etc. therefore it is necessary to study the road safety and performance in Kolhapur city.

II. OBJECTIVES

1) Review of current status and literature review and understanding the major causes of accidents of road.
2) To control over the risk involved in operating vehicles.
3) To suggest improvement for safe working of vehicle on road.
4) Detail Study of selected road stretches.


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A Literature Review on Beam Column Joints with Different Loading Condition and Methods of Strengthening

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Abstract: ***The beam–column joint is measured as the most important zone in a reinforced concrete moment resisting frame. It is subjected to large forces during earthquake and its behaviour has a major influence on the response of the entire structure. As a result, a great attention has to be paid for good detailing of such joint. The absence of transverse reinforcement in the joint, insufficient development length for the beam reinforcement and the inadequately spliced reinforcement for the column just above the joint can be considered as the most important causes for the failure of the beam–column joint under any unexpected transverse loading on the building. The recent earthquakes revealed the importance of the design of reinforced concrete (RC) structures with ductile behaviour. Ductility can be described as the ability of reinforced concrete cross sections, elements and structures to absorb the large energy released during earthquakes without losing their strength under large amplitude and reversible deformations.***

I. LITERATURE REVIEW

A. Said M. Allam , Hazem M.F. Elbakry , Israa S.E. Arab(2018)

The joints between beams and columns are crucial zones in a reinforced concrete moment resisting frame. The behaviour of such joints greatly influences the strength and ductility of the overall frame. In this research, analysis of three-dimensional numerical models of exterior reinforced concrete beam-column joints under monotonic loading was performed using the finite element ABAQUS package.

Concrete and reinforcing steel material nonlinearities, as well as bond characteristics between reinforcing bars and surrounding concrete were considered in the analysis. A parametric study involving thirty joint models was conducted to examine the influence of concrete strength, column axial load, joint stirrups and shape of the beam top reinforcement on the beam tip load and displacement capacities.

The concrete dimensions and reinforcement of the studied models were chosen to ensure the occurrence of joint failure. The use of straight bars for beam top reinforcement resulted in generally lower ultimate loads than those obtained with L- and U-shaped bars. Similar joint behavior was demonstrated for the cases of using Land U-shaped beam top reinforcement.

B. Jawed Qureshi, Dr. Yashida Nadir, Shaise K John(2020)

Presented are test results from eight full-scale pultruded FRP beam-to-column joint subassemblies. Moment-rotation behaviour, failure modes, joint classification and load enhancement due to semi rigid end conditions are discussed. Testing is divided in two series: first had FRP beam-to-steel column joints and second FRP beam-to-FRP column joints. The joints are either flange and web cleated or flange cleated only.

The connection method is bolting or 'hybrid' combining both bolting and bonding. Test parameters include effects of adhesive bonding, column flexibility, cleat material and joint configuration. Bolted and bonded joints not only increased moment resistance but stiffness as well. Using steel cleats instead of FRP resulted in a 50% increase in the moment resistance. Four failure modes, shear-out failure, adhesive debonding with shear-out failure, tensile tearing of the column flanges from the web and de lamination cracking of cleats were observed. Use of adhesive increased both moment capacity and rotational stiffness, but it reduced the maximum rotation capacity. Bolted and bonded joints failed in a brittle manner due to adhesive failing in tension and shear, and the failure transferring to the bolted region. There was 60% increase in moment capacity for FRP beam-to-steel column joints and 20% for FRP beam-to-FRP column joints. While industry practice of using adhesive alongside bolting should be continued, any improvement in either moment or rotational stiffness should be used cautiously.


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Performance Evaluation of Laboratory Scale Vegetated Vermifilter for Domestic Wastewater: Case Study of Kolhapur

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Abstract -
Earthworm bodies have been shown to act as biofilters and remove BOD, COD, TDS, and TSS through common mechanisms of uptake, biodegradation, and absorption from the body wall. Two laboratory-scale vertical vermifilters will be developed. One uses only canna indica and filter media, and the other uses canna indica and (earthworms) with the filter media. The experimental phase will last 72 hours. Various parameters such as BOD, COD, pH, turbidity, canna indica growth, bed clogging. Organic waste management is increasingly concerned due to unsustainable disposal practices. Sewage treatment facilities are designed to treat wastewater in a way that produces safe wastewater. However, one of the by-products, sewage sludge, is rich in pathogens because it is disposed of in landfills and used as fertilizer on farms. Sustainability can be achieved by composting organic matter with vermi. This includes accelerating nutrient circulation through a closed-loop system, leading waste to productive end applications. Earthworm composting and worm filtration are natural waste management processes that rely on the use of worms to convert organic waste into stable soil concentrates. We investigated the fate of filter materials and microbial communities during the vermifiltering process for a month while treating concentrated miscellaneous wastewater. Two filters are filled with 10 cm, the first layer from the bottom is coarse aggregate (size 20 mm, height 6 mm), the second layer is (size 10 mm, height 4 mm), and the third layer is charcoal (size). 25mm, height 4mm), 4th layer is sand (size 4mm, height 4mm), 5th layer is soil, last layer is freeboard.

Key Words:Domestic Wastewater, Vermifilter, COD, BOD, Canna Indica, Eisenia Fetida.

1. INTRODUCTION:

According to UNICEF, an estimated 564 million people defecate in India, which is almost half of the world's population. According to the latest Indian Census, 49.84% of people practice open turf, while 47% of Indian households have a household toilet. Most Indian cities are only partially drained. A whopping 48% of urban households in India rely on on-site facilities (mainly septic tanks and pit latrines) to meet their hygiene needs. This reliance on on-site hygiene naturally increases with rapid population growth and urbanization. Therefore, at the national level, it is clear to focus on a sustainable service delivery approach to hygiene. Indian cities often face the challenge of connecting suburbs and underdeveloped parts of the city to existing sanitation systems (such as sewage treatment facilities). In such cases, the decentralized treatment approach is a logical solution. In this system, wastewater is treated at or near a water source and rather than being connected to a centralized sewage system, a relatively small amount is discharged from a single house to the entire community nearby. This system offers the advantage of recycling and reusing wastewater in that particular area. The current take-make-up-disposal approach can be counteracted by this system, which complements the concept of "circular economy". The amount of miscellaneous wastewater produced at home varies greatly from about 15 liters per person per day in poor households to 100 liters per person per day. Of the 100%, 25% is black water, 75% is reclaimed water, and can rise to 90% in drywall. Reclaimed water accounts for 69% of domestic wastewater. To recycle and reuse such a large amount of wastewater, treatment options should be considered. One such solution is decentralized processing, which allows the community to focus on the most pressing processing needs, while allowing smaller design flows and waste areas. As a result, the financial burden is concentrated on individual properties rather than the entire district. For rural or remote residential or community applications, decentralized systems have


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To Study Rehabilitation of Old Elevated Water Tank and to Generate Non-Conventional Energy

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Abstract: ***Many of the existing reinforced concrete structures around the world are in urgent need of reinforcement, repair, or reconstruction due to structural damage that occurs for a variety of reasons. The main purpose of this project is the restoration of an existing ancient water tank (Panyacha Khajina) on Old Mahadwar Road in Kolhapur, Maharashtra. Therefore, it is necessary to store water for daily use, the water storage tank should be in good condition and should be repaired if damaged. To find defects in the aquarium, first perform a visual inspection such as photography, checking for the effects of cracks and corrosion, and then inspect the existing aquarium structure, including collecting information on repair work. In this plot, you can install the solar system on top of the existing water tank to increase the efficiency of the plot. Since we are not using a surface water tank, the project`s idea is to install solar panels on the roof of the tank to generate electricity so that it can be used for various purposes. Next, you can deploy 113 solar panels and find a total of about 146 units of energy per day. Due to the limitations and impacts of non-renewable energy sources, people around the world need to pay attention to renewable energy sources.***

Keywords: Renewable energy, Non-renewable energy, Restoration, aquarium.

I. INTRODUCTION

Rehabilitation of structure:- Water tanks are used to store daily water, and the water tanks need to be kept in good condition. Elevated water tanks are mainly used for water supply and fire protection. Clean water is essential for a healthy and safe life. Buildings built usually lose their strength as the building ages {i.e: Usually after 20 or 30 years.} Over time, these buildings have lost strength due to material deterioration, unexpected overloads, structural defects, and cracks in water tanks. The structure is weakened due to the reduced durability. If the cause of the cracking or deterioration of the concrete is not identified in time, the aquarium may fall or an accident may occur. Therefore, repair and rehabilitation are very important. That means updating the structure by repairing and repairing the damage. Helps improve structural stability and maintainability. Instead of demolishing or pouring the entire structure, we suggest remediation measures that can re-inspect the structure, be economical and save money. Before trying the repair method, a planned approach is needed to examine the condition of the concrete and rebar. The first step in repair and refurbishment is the correct diagnosis for a successful refurbishment operation. It deals with non-destructive evaluation techniques, laboratory tests and conditions. Commonly used non-destructive testing such as rebound hammer test, ultrasonic pulse velocity test (UPV), pullout test, core test, chloride test, carbonization test, pH measurement, resistance test, differential thermal analysis (DTA), etc.

Non-Conventional Energy:- Not only is energy essential to human survival, its availability is seen as the backbone of national growth and development. India has experienced rapid urbanization and industrialization over the past few decades.

Today, with the declining amount of renewable energy sources, the last decade has become increasingly important to the cost per watt of solar energy devices. It will definitely be economical and will grow as a better technology in terms of cost and applications over the next few years. The earth receives sunlight from above every day (about 1366W). This is an unlimited source of energy available for free. The great advantage of solar energy over other traditional generators is the ability to convert sunlight directly into solar energy using small photovoltaic (PV) solar cells. There has been a lot of research activity to combine solar energy processes by developing high conversions from solar cells / modules / panels. The biggest advantage of solar energy is that it is freely available and available in large quantities to the general public, compared to the prices of various fossil fuels and oils over the last decade. In addition, solar energy requires significantly less personnel than traditional power generation technologies. Unconventional energy has the potential to minimize pollution, reduce global warming, create new industries and jobs, and drive the country towards a cleaner and healthier energy future.


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Comparative Study Of Performance Of 15% Neem Biodiesel On Single Cylinder Computerized Diesel Engine For Different Compression Ratio and Load

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Abstract : Requirement of diesel fuel is increasing day by day due to its advantages like low cost, high efficiency, low brake specific fuel consumption. In India about two third of petroleum products imported from oil and petroleum exporting countries. Diesel is non renewable source of energy and they are depleting with time in nature also causes pollution issues. So it is necessary to replace Diesel fuel by biodiesel which will gives contribution to improve Indian economy by use of biodiesel blends. Biodiesel is a renewable, biodegradable fuel manufactured domestically from vegetable oils, animal fats, or recycled restaurant grease. .It is also necessary to study the performance and emission of different biodiesel and find out the alternative for the diesel fuel. This paper focuses on performance of 15% neem biodiesel for different Compression ratio and load to find out optimum condition for performance of diesel engine. Performance of engine is measured by break power, break thermal efficiency, break specific fuel combustion and volumetric efficiency.

IndexTerms - Neem biodiesel, brake thermal efficiency, compression ratio, Computerized diesel engine.

1.INTRODUCTION

Energy is the basic need for economic development of any country and the largest source of energy in India after coal is Petroleum diesel. Fossil fuels are non-renewable sources where stored energy is released due to combustion, such as coal, natural gas, petroleum and they account for almost 80% of energy used worldwide. In India about two third of which is imported from oil and petroleum exporting countries. High dependence on imported fuel and due to frequent fluctuations in petroleum prices has made Indian economy insecure. This rapid development has necessitated the equal rapid expansion of transport sector (rail, surface, air and sea) which entail the use of internal combustion engines. Compression ignition engines namely diesel engines are supposed to be the most efficient engines as they achieve better fuel economy, lower carbon dioxides emissions than conventional spark ignition engines fuelled by gasoline. However, these engines tend to be more costly and emit high level of nitrogen oxides and particulate matter and are the major contributor to air pollution as it is extensively used in public transport and goods transport . *Biodiesel*, based on vegetable oils and animal fats is an alternate fuel which is considered safe. Biodiesel is a renewable, biodegradable fuel manufactured domestically from vegetable oils, animal fats, or recycled restaurant grease.. Biodiesel is a liquid fuel often referred to as B100 or neat biodiesel in its pure, unblended form. Like petroleum diesel, biodiesel is used to fuel compression-ignition engines. Blends of biodiesel and conventional hydrocarbon-based diesel are most commonly distributed for use in the retail diesel fuel marketplace. Much of the world uses a system known as the "B" factor to state the amount of biodiesel in any fuel mix.


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Behaviour of Compressive Strength of M20 Grade Concrete using Ruber Crumb, Magnetized and Normal Water

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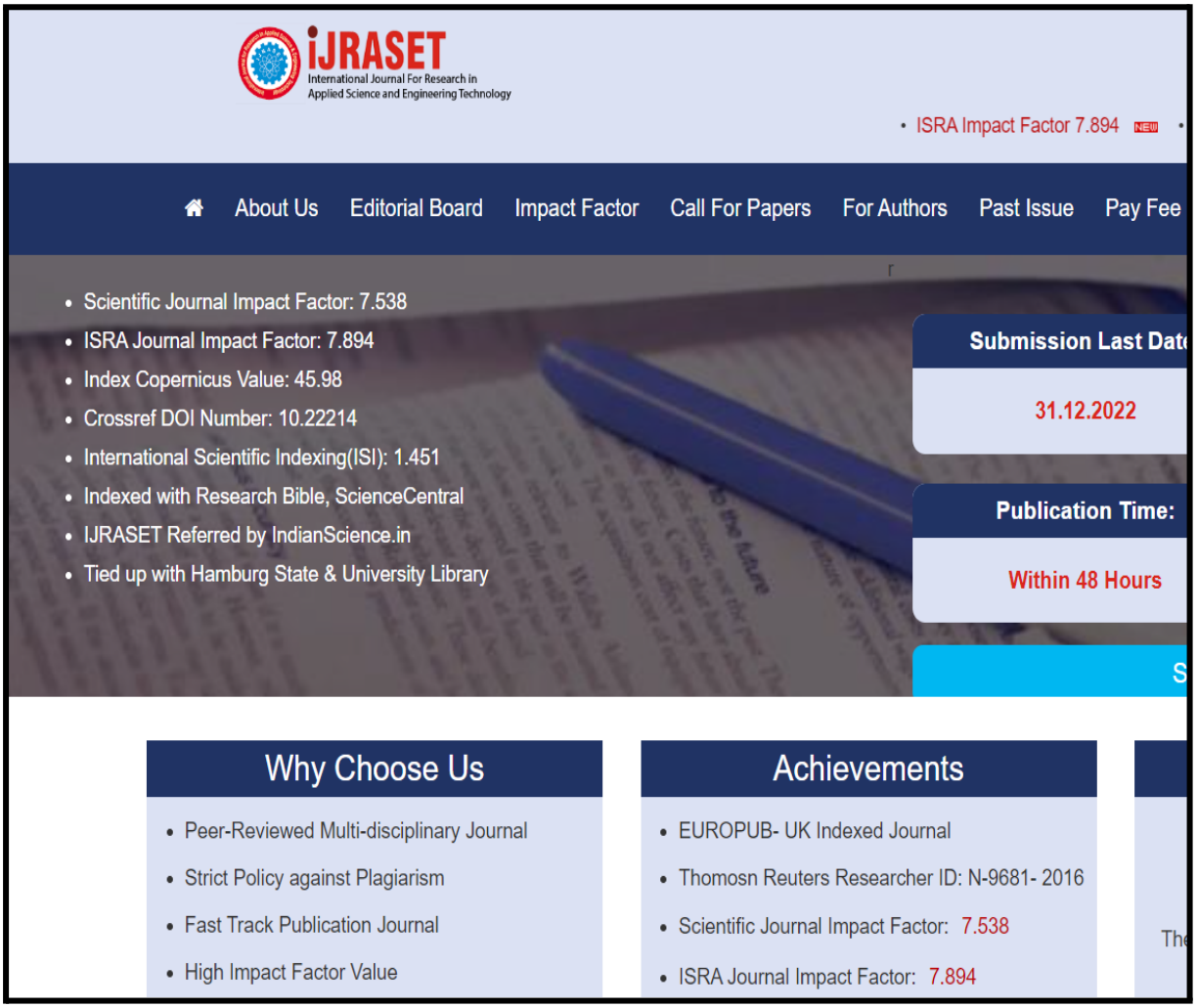
***Abstract*— Water plays an important role in the concrete preparation. It plays an important role in workability and strength of concrete. A new technology known as magnetized water is used to increase the workability and strength of concrete. At the same time, after pure water is magnetized, we should inject immediately the magnetized water into the sample baths of the instrument to measure their properties because the time, in which the magnetization effect can be retained, is finite. The experiments should be repeated about 2-3 times for their credibility. Hence normal water concrete with crumb rubber shows nearly same strength compared to normal water concrete, so waste can put to work. This paper aims to comparative study of M20 grade concrete with Crumb Rubber and magnetic water. The literature study showed that there can be improvement in compressive strength of concrete when it is used with magnetic water. the results here show the compressive strength of concrete can be considerably increased.**

Keywords: Magnetise Water, Rubber Crumb, Compressive strength.

INTRODUCTION

In this research study, the effect of magnetized water on compressive strength of concrete was studied, in order to obtain operative concrete with high resistance and at a lower cost. Data were collected from previous studies and research. Compressive strength tests were carried out and it was found out that concrete produced by the magnetic technology is easy to operate without affecting the compressive resistance of concrete. It was also found that magnetized water increases the compressive resistance of concrete while cement is reduced up to 25%. As considering the crumb rubber huge amount of waste can be brought into converting factor as comparing on going global wastages solution. Urbanization and the day-to-day exponential increase in the number of automobiles has increased the usage of rubber. As an attempt to reuse this waste, many experimental studies are carried out using it as a filler material in concrete industry. Water is an important ingredient of concrete as it actively participates in chemical reaction with cement. Since it helps to form strength giving cement gel, the quantity and quality of water is required to be studied. So, there is a need to do the necessary research on modification of water to increase the strength and quality of concrete.

Hence, it can be expected that partial replacement of natural fine aggregates with recycled fine aggregates might not decrease the strength to a larger extent. To overcome above problems with recycled aggregates concrete, now a day's electromagnetic water is used to manufacture the concrete by some researchers. Electro-magnetic water concrete has been recently developed by using electromagnetically treated water instead of potable water in concrete. Based on the literature survey, it is observed that, electro-magnetized water is found to increase compressive strength of concrete by 20% to 30% Based on the above scenario and literature study, present study is focused on the experimental investigation to check the effect of crumb rubber on concrete, comparison of normal water concrete and electromagnetic water concrete. Ultimately, it is expected that the use of rubber crumb and magnetic water will help to increase the strength of concrete and enhance the re-centring ability of concrete. Recycled fine aggregates will be used for re-using the demolished waste. While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Feasibility Study of Zero Discharge Concept in Sugar Industry After Anaerobic Treatment: Case Study of Solapur

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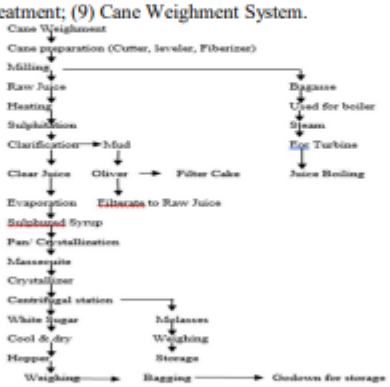
Abstract: ***Purification and reutilisation of waste water from different industries is a challenge for a smarter and healthier environment. An important role in Indian economy is played by an agro based industry segment which is nothing but sugar industry. But the effluent from the industry is a proven fact as a threat for environment. Effective waste water management can result in smart and healthy city environment. The treated colored effluent from the industry is not preferred for reuse and recycle, though the other BOD, COD, TDS, TSS, MPN are in permissible limit. Root zone technique is one of the important approaches for, as the process is economical, easy in operation and maintenance. Pilot plant is constructed and executed using a typical species. The intake of treated effluent and the final effluent from root zone technique were collected and tested for various contact hours. To accommodate the massive urbanization it can be used to find smarter ways to reduce expenses, manage complexities that's the treated waste water from industry can serve for following: 1) Gardening 2) Fire Fighting 3) Washing 4) Toilet Flushing etc. For a better and smart management of treated waste.***

Keywords: Agro based industry, sugar industry, colored, root zone technique, species, contact hours.

I. INTRODUCTION

Today, numerous urban areas catch water from encompassing lakes, streams, or supplies, empty a large number of dollars into treating and transporting that water to homes and business, and afterward toss that water after a solitary utilization. In water scarce situations, this "expendable water" methodology is inefficient and dangerous. Over-extraction of surface and groundwater can diminish environment capacity, bring about area subsidence, and fuel clash. It additionally strains open spending plans, diverting stores into water supply extends that would be superfluous with more effective utilization of existing assets.

Vithalrao Shinde Sahakari Sakhar Karakahana Ltd. has initial installed cane crushing capacity of 2500 TCD. Sugar factory was established for manufacturing of crystal sugar by double sulphitation process from sugar cane juice and from 2001-02 cane crushing capacity up to 6000 TCD. Sugar factory shown tremendous enhancement for development in Financial & Educational, Upliftment, & overall progress in rural area. In Maharashtra, Vithalrao Shinde Sahakari Sakhar Karakahana has only the anaerobic digester i.e., (UASB Up flow Anaerobic Sludge Blanket) for treating the effluent. Sugar manufacturing process involves mainly nine stages as mentioned below(1) Cane weighing; (2) Cane handling and preparatory system; (3) Milling system; (4) Juice clarification system; (4) Evaporation; (5) Vacuum pan boiling and crystallization; (6) Curing, Drying, Grading, bagging and warehousing; (7) Final molasses storage; (8) Effluent to make treatment; (9) Cane Weighment System.



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Identification, classification, and grading of plant leaf diseases using CBIR and K-means clustering

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ABSTRACT

Plant disease management involves the identification, classification, and grading of plant disease according to disease severity. It is not only a challenging task that involves human resources but also includes expertization and timely decisions to reduce the threat of reduced production and high spread of disease. The efficiency of recently developed systems depends on the selection of image features and accuracy in the segmentation of diseased portions. The research in this paper presents Content-Based Image Retrieval (CBIR) system implemented for the identification and classification of leaf diseases. The system is further upgraded with the extraction of diseased portion of the leaf using K-means clustering technique for grading the disease severity. The retrieval system is realized using of color, shape, and texture features of the leaf. It is observed that the proposed system performs the tasks of disease identification, classification, and severity grading accurately and consistently

Keywords: CBIR, Disease, Color, Shape, Texture

I. INTRODUCTION

Most of the population in agricultural countries depends on agriculture for livelihood. Because of suitable atmospheric condition in India agriculturalist have wide range of diversity for cultivation of suitable fruits and vegetable crops. However, the cultivation of these crops for optimum yield and quality produced is highly affected by crop diseases. Hence proper cultivation of crops requires close monitoring especially for the management of diseases that can affect production significantly and subsequently the post-harvest life. Disease is caused by pathogen and its symptoms are observed on plant leaves, stem, flowers and fruits and also produce different traits like change in the size and shape of leaf, stem, flowers and fruits. Identification of the disease in its early stage enables timely cure and control over it. This process requires an expert to identify and classify the disease, describe the method of treatment and protection. Identifying the plant disease is not easy task. It requires experience and knowledge of plants and their diseases. It also requires accuracy in describing the symptoms of plant diseases. Agriculturalist can depend on a system which has experience and knowledge, called an Expert System.

An expert system can be an excellent agriculturalist, agricultural advisor, Electronic or Computerized expert system. An excellent agriculturalist is able to catch the change of the crops in the growing process and they manage the cultivation in proportion to the change. This ability of catching the delicate change in crops is developed in them through the observation and long cultivation experience. It is difficult for them to transmit this knowledge to future generations [1]. If agriculturalists decide to take advice from agricultural expert regarding the treatment of pest /disease/ fruit to their crop/plant in order to increase the crop productivity then he may face following situations [2]:

i) Sometimes agriculturalist has to go long distances for approaching the expert.
ii) Even though they go such distances expert may not be available at that time.
iii) Sometimes, the expert whom a agriculturalist contacts, may not be in a position to advise him with the available information and knowledge.

In these cases seeking the expert advice is very expensive and time consuming.

Since disease diagnosis which includes identification classification and grading is based on visual inspection, it is possible to apply several image processing and computer vision techniques for diagnosis. The systems developed using such techniques are considered as Electronics expert systems. Electronic expert systems help agriculturalists in identifying diseases, making the right decision of treatment and selecting the best one. The expert systems are intelligent computer programs that are capable of offering solutions or advices related to specific problems in given domain, both in a way and at a level comparable to that of human expert in a field. One of the advantages of using Electronic expert systems is its ability to reduce the information that human users need to process, reduce personnel costs and increase throughput. Another advantage of expert system is that it performs tasks more consistently than human experts [3].


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XGRAPH & GNUPLOT IMPLEMENTATION OF AODV & DSDV ROUTING PROTOCOL IN MANET USING NS2

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Abstract: The Mobile Adhoc Network also called as MANET is basically wireless network without any fixed infrastructure. It has wireless mobile nodes which are randomly moving in given network topology. It supports dynamic topology where set of mobile nodes communicate each other with the help of routing protocols. A routing protocol decides how packets can be forwarded from source node to destination node via some intermediate nodes by distributing routing information to enable best possible route on a computer network. Therefore, routing protocol plays a important role for providing best route between nodes and establish communication within network. In this paper we have evaluated performance of two routing protocols- AODV(Ad-hoc On-demand Distance Vector) & DSDV (Destination-Sequenced Distance-Vector) using NS2.35 based on different network metrics. Also we have implemented Xgraph & Gnuplot utility of NS2.35, which is inbuilt function for plotting graphs.

Index Terms **- MANET, AODV & DSDV**

1. INTRODUCTION :

MANET Wireless ad-hoc networks consist of self- managed autonomous nodes without any fixed infrastructure. They have dynamic topology , that implies nodes can without much of a stretch join or leave the organization at some random moment [6-7]. This makes them very useful in various applications, like in military for connecting soldiers on the battle field and in disaster situation like earthquake for establishing a temporary network in place of a existing network which crash after a disaster. Ad-hoc networks are well suited for region where we want to have temporary network without any fixed infrastructure. Nodes in MANET communicate with each other by forwarding packets within themselves without an infrastructure.

MANET are alluded to be self getting sorted out and arranging remote organization network . For the information exchange purpose, nodes make use of wireless channel & forwards the information. In MANET, every node is acting as host or router that forwards data to other nodes or receives data from other nodes. Here in this type of network scenario if the collector hub is out of inclusion region from the sending hub who is communicating the information , then a routing calculation is constantly expected to figure out the best way between sender node and receiver node so that the packets reaches to its intended destination successfully To Support the process of connectivity & transmission , nodes makes use of routing protocols such as Destination-Sequenced Distance-Vector & Ad-hoc On-Demand Distance Vector [5].

2. ROUTING PROTOCOLS:

Routing is nothing but way of exchanging data from source node to destination node in the network via intermediate node. Due to short range of nodes, the remote divert directing routing channel in MANET is generally executed through multi-hop, where the message is ordinarily sent by the transitional intermediate mobile nodes. The directing conventions that are utilized in MANET characterizes the route and trade the packets in the nodes, from Source node to intended Destination node.

In this paper, we are going to provide brief idea about two basic types of routing protocols in MANET such as Destination-Sequenced Distance-Vector Routing & Ad-hoc On-demand Distance Vector Routing . Also we are going to evaluate performance of these two protocols using Xgraph & Gnuplot utility in NS2.35.


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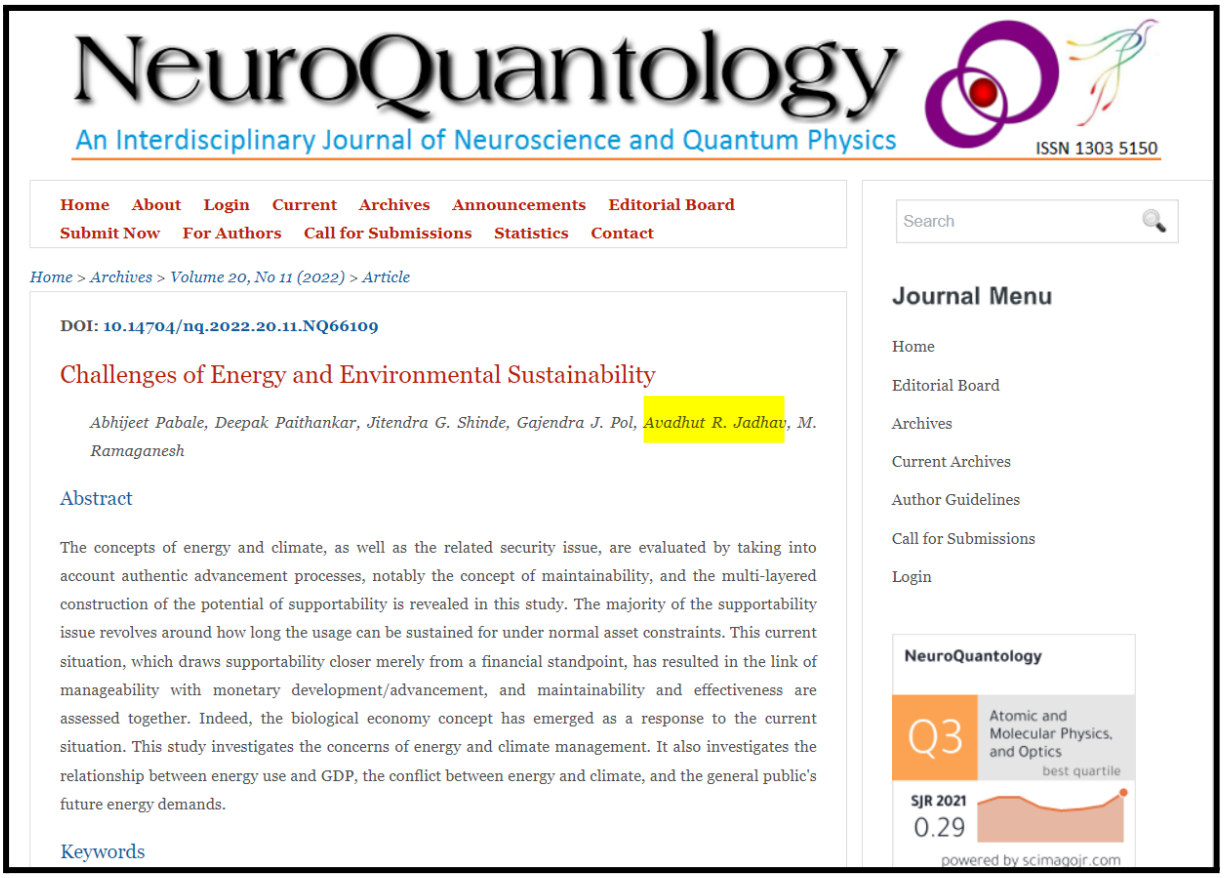

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Challenges of Energy and Environmental Sustainability

Abhijeet Pabale, Deepak Paithankar, Jitendra G. Shinde, Gajendra J. Pol, Avadhut R. Jadhav, M. Ramaganesh

Abstract

The concepts of energy and climate, as well as the related security issue, are evaluated by taking into account authentic advancement processes, notably the concept of maintainability, and the multi-layered construction of the potential of supportability is revealed in this study. The majority of the supportability issue revolves around how long the usage can be sustained for under normal asset constraints. This current situation, which draws supportability closer merely from a financial standpoint, has resulted in the link of manageability with monetary development/advancement, and maintainability and effectiveness are assessed together. Indeed, the biological economy concept has emerged as a response to the current situation. This study investigates the concerns of energy and climate management. It also investigates the relationship between energy use and GDP, the conflict between energy and climate, and the general public's future energy demands.

Keywords


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A Literature Review on Beam Column Joints with Different Loading Condition and Methods of Strengthening

Satish S. Kotwal[1], Vidyanand S. Kadam[2], Mayur M.More[3], Ananda S Patil[4], Nitish A Mohite[5]
1, 2, 3, 4, 5 Assistance Professor, Bharati Vidyapeeth's College of Engineering, Kolhapur,

Abstract: ***The beam–column joint is measured as the most important zone in a reinforced concrete moment resisting frame. It is subjected to large forces during earthquake and its behaviour has a major influence on the response of the entire structure. As a result, a great attention has to be paid for good detailing of such joint. The absence of transverse reinforcement in the joint, insufficient development length for the beam reinforcement and the inadequately spliced reinforcement for the column just above the joint can be considered as the most important causes for the failure of the beam–column joint under any unexpected transverse loading on the building. The recent earthquakes revealed the importance of the design of reinforced concrete (RC) structures with ductile behaviour. Ductility can be described as the ability of reinforced concrete cross sections, elements and structures to absorb the large energy released during earthquakes without losing their strength under large amplitude and reversible deformations.***

I. LITERATURE REVIEW

A. Said M. Allam , Hazem M.F. Elbakry , Israa S.E. Arab(2018)

The joints between beams and columns are crucial zones in a reinforced concrete moment resisting frame. The behaviour of such joints greatly influences the strength and ductility of the overall frame. In this research, analysis of three-dimensional numerical models of exterior reinforced concrete beam-column joints under monotonic loading was performed using the finite element ABAQUS package.

Concrete and reinforcing steel material nonlinearities, as well as bond characteristics between reinforcing bars and surrounding concrete were considered in the analysis. A parametric study involving thirty joint models was conducted to examine the influence of concrete strength, column axial load, joint stirrups and shape of the beam top reinforcement on the beam tip load and displacement capacities.

The concrete dimensions and reinforcement of the studied models were chosen to ensure the occurrence of joint failure. The use of straight bars for beam top reinforcement resulted in generally lower ultimate loads than those obtained with L- and U-shaped bars. Similar joint behavior was demonstrated for the cases of using Land U-shaped beam top reinforcement.

B. Jawed Qureshi, Dr. Yashida Nadir, Shaise K John(2020)

Presented are test results from eight full-scale pultruded FRP beam-to-column joint subassemblies. Moment-rotation behaviour, failure modes, joint classification and load enhancement due to semi rigid end conditions are discussed. Testing is divided in two series: first had FRP beam-to-steel column joints and second FRP beam-to-FRP column joints. The joints are either flange and web cleated or flange cleated only.

The connection method is bolting or 'hybrid' combining both bolting and bonding. Test parameters include effects of adhesive bonding, column flexibility, cleat material and joint configuration. Bolted and bonded joints not only increased moment resistance but stiffness as well. Using steel cleats instead of FRP resulted in a 50% increase in the moment resistance. Four failure modes, shear-out failure, adhesive debonding with shear-out failure, tensile tearing of the column flanges from the web and de lamination cracking of cleats were observed. Use of adhesive increased both moment capacity and rotational stiffness, but it reduced the maximum rotation capacity. Bolted and bonded joints failed in a brittle manner due to adhesive failing in tension and shear, and the failure transferring to the bolted region. There was 60% increase in moment capacity for FRP beam-to-steel column joints and 20% for FRP beam-to-FRP column joints. While industry practice of using adhesive alongside bolting should be continued, any improvement in either moment or rotational stiffness should be used cautiously.


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TRENDS IN THE INTERPRETATION OF POPULAR FICTION

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Abstract:

The very origin and usage of the word popular is not literary and various contextual interpretations had been in practice since long ago. It is often viewed as a minor, less valuable and inferior to the so-called classic in every manifestation of art and literature. The entire (meta) genre of popular literature and its subgenres are the victims of academic biases against them as the negative interpretations of the term are widely circulated and deeply rooted. The term popular literature or popular fiction is itself not suitable for canonical definitions. For this reason, it is not studied as a unique or secluded literary concept or form. Origin and development of popular fiction, especially, is studied always along with the socio-economic factors prevalent in the respective ages. Its huge success in terms of sales figures and wider access made academia to view it from some favourable perspectives. The transitions in the study of popular literature as well as popular fiction from labeling them as the products of commercial interests to their gradual academic acceptance is not so easy. It will not be an exaggeration that this genre and its subgenres like popular fiction are struggling still to make their distinctive place in the sphere of academia. The bitter criticism went to such an extent that it was viewed as an antonym of serious or so called classic literature and its binary too. The modern multimedia is truly a blessing in disguise for the popular literature and its various subgenres. They initiated multi-dimensional studies which brought many considerable results forward and opened this rather neglected literary type for variety of theoretical and critical discussions.

Keywords: Popular, popular fiction, reception, academia, commercial, formulaic

Introduction

In the last quarter of the 20th century and the trend continues also in present times, we witness a proliferation of popular fiction. They are popular in the sales figures as well as number of titles published. Readers have a crucial role in the development of popular fiction since the success of popular fiction in


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A Literature Review On Use Of Rice Husk Ash As Cementation Material

Mr.Satish S.Kotwal[1], Mr.Vidyanand S.Kadam[2], Mr. Mayur M. More[3], Mr Ananda S Patil[4], Mr.Nitish A.Mohite[5], Mr.Mane V. V[6]
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Abstract: ***The cement has been the major building material in today's construction because of its binding and high compressive strength properties. Beside this, it also causes release of greenhouse gas carbon dioxide which causes global warming and other environmental issues. Researches were done to decrease the carbon footprint and use of waste material to be used in construction. The rice husk ash is waste materials which have shown promising results if replaced with cement in production of concrete. Previous researches done by researcher's shows that it enhances the corrosion resistance capability of produced concrete with RHA and some increase in compressive strength. In this literature review is related to increase in strength of concrete depending on age of concrete & percentage of RHA addition. Keywords: Rice Husk ash, Waste materials, Concrete, Cementation material, RHA, compressive strength***

I. INTRODUCTION

Concrete is widely and globally used throughout the history of humankind. Concrete is a mixture of sand and coarse aggregate combined together by a hardened paste of cement and water. The increased use of concrete is going to grow the demand for its ingredients' resources (cement, sand, and gravel). The high rate of concrete constituents is increasing rapidly and hence there is a requirement for an unconventional material that is low-cost and readily presented that will also give a similar or greater strength when used for concrete. Cement is one of the constituents of concrete which is costly and its production releases large amounts of CO_2 during its manufacturing. Manufacturing one tonne of cement releases about one tonne of CO_2 in the atmosphere while 1.6 tonnes of natural resources are required to produce about one tonne of cement. In many studies the cement is partially replaced by agricultural/industrial waste such as glass powder, sugar cane bagasse ash, rice husk ash (RHA), blast furnace slag, maize cob ash, millet husk ash, fly ash etc. in order to reduce cost, waste and CO_2 emissions while these resources are easily available.

II. OBJECTIVE

The main objective of this paper is to study Rice Husk Ash (RHA), it's property and potential to be used as a replacement of cement in concrete production

III. LITERATURE REVIEW

Following are the critical literature reviews on various papers based on experimental research work on use of Rice Husk Ash.D.V.

A. Reddy, Ph. D, P.E. and Marcelina Alvarez, B.SFourth LACCEI International Latin American and Caribbean Conference for Engineering and Technology (2006)

Detailed, the use of RHA will not only concrete production of better quality and low cost, but also reduce carbon dioxide (CO2) emissions from cement production. The partial replacement of cement by RHA will result in lower energy consumption associated with cement production. The potential market for rice husk energy systems and equipment has been studied by Velupillai et al. (1997). The reference also addresses economic development, urbanization, living standards, stricter environmental regulations, and consolidation in the rice milling industry is the reduction of certain traditional uses balls, and creating new opportunities for the use of the envelope. He discusses the potential use of rice husk Ash (RHA) as a cementations material in concrete mixes. RHA is produced by burning rice husk which is a by-product of rice milling. The ash content is about 18 to 22% by weight of rice hulls. Research has shown that concrete containing RHA in partial replacement of cement concentrations of 10% to 20% by weight of cement has superior performance characteristics compared to normal concrete. In addition, the use of ORS would result in a reduction in the cost of concrete construction, and the reduction of the greenhouse effect on the environment.

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Study of public attitude towards household waste management in selected rural area in Kolhapur District.

Bhokare Pooja A [1], Figueredo Priya K. [2], Mohite Nitish A[3], Bhurale. Shubham. P[4], Shaikh. Sohil. K.[5], Sutar Narpat B [6], Sutar Rushabh. J. [7], Tepugade Ganesh B [8]

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ABSTRACT: One of the frightening issues in modern life is the collection and disposal of municipal solid trash. The ineffective and improper methods of disposing of solid waste cause aesthetic blights, serious risks to public health, such as air pollution, accident risks, and an increase in rodent and insect vectors of disease, have a negative impact on land values, cause public nuisance, and otherwise obstruct community life and development. Unattended SW invites rodents, flies, and other animals, which in turn spread infections. Wet SW also decomposes and emits a foul stench. Health issues result from these unclean circumstances. Therefore, it's critical to manage SW to reduce its negative effects on human health and the environment. Development of understanding is required for solid waste management (SWM).Solid garbage dumped at a dump site serves as a current indicator.Current research focuses on the scientific assessment of public opinion regarding solid waste management and investigation of potential solutions which are practicable in local context. The rural community of Kandalgaon in the Maharashtra state, close to Kolhapur, was chosen as the subject region for this investigation. The primary accomplishments of the programme are the survey of village residents, calculation of the potential for tentative garbage creation, and exploration of alternative solid waste management options.

Key words: Solid Waste, Dumping, Surveying, Landfilling

1. INTRODUCTION:

The collection and disposal of municipal solid waste is one of the grave issues facing modern society. The amount of municipal solid garbage produced every day in the nation is estimated to be over 100000 MT. Solid trash should be disposed of properly and efficiently to avoid major risks. The solid trash dumped at the disposal site serves as a current indicator. It is crucial to do this by reducing the amount of solid waste that is produced. Some disease and


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Studies of Physico-Chemical Parameters to Access the Water Quality of Sonhira Lake (Chinchani) For Agricultural Farming Purpose in Kadegaon Tehsil (Sangli District)

THORAT J. C[1], MORE A. L[2], KAMBLE P. D[3]
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Abstract*— The present study was carried out with the aim to assess of water quality using physico-chemical parameters of Sonhira Lake, such as (temperature, pH, EC, TDS, Calcium, Magnesium, Sodium, Potassium, Carbonate, Chloride, Sulphate of water samples from different sampling points. Comparatively study three villages interpoint distance is 2 to 6 km. it was observed that the water in sonhira lake is better quality. Sonhira Lake receives the small amount of pollution from the surroundings. The results revealed that the average pH value was analyzed as 7.5, Electrical conductivity was 0.52 mhos/cm, parameters include total solids 259 ppm, chlorides was 0.92 ppm, sodium was 1.27ppm, potassium was 0.054ppm, sulphates was 0.92ppm in of sonhira lake water. It was observed that water in Chinchani, Sonkire and Sonsal are better quality.** *The general classification scheme along with concentration ranges defined in these classes will be of immense use for determining the surface water quality status with reference to specific individual parameter.* ***The result obtained from the present study shall be useful of water quality of Sonhira Lake is better use to Agricultural Farming.

***Indexed Terms*— Agricultural water, physico-chemical parameters, Water Quality Test, Description, Instruments/method**

I. INTRODUCTION

Water is a substance composed of the chemical elements hydrogen and oxygen and existing gaseous, liquids, and solid states. It is one of the most plentiful and essential of compounds. It has the important ability to dissolve many other substances. It is important to all living organisms, human health, food production and economic development. Water is a critical input for agricultural production and plays an important role in food security. Lakes and surface water reservoirs are the planets most important freshwater resources and provide in numerable benefits. They are used for domestic and irrigation purposes and provide ecosystems for aquatic life especially fish. The physico-chemical parameters are very essential and important to test the water, before it is used for drinking, domestic, agricultural or industrial purpose. The physic-chemical parameters is very important to get exact idea about the quality of water and then we compare the obtained results with standards values.

Farm water, also known as agricultural water, is water committed for use in the production of food and fiber and collecting for further resources. Water is one of the most fundamental parts of the global economy. In areas without healthy water resources or sanitation services, economic growth cannot be sustained. It is therefore necessary that water quality investigation or assessment can be done to find out whether the available water from the termed reliable sources is safe for drinking and other uses.

Improving water use efficiency of irrigation systems may also reduce negative environmental impacts. Lining canal systems reduces conveyance losses in surface water-based irrigation systems. The proportion of fresh water on earth's surface is only 2.5% of which only 1% is accessible for use. In this context, lakes are one of the most important water resources and have been used as a source of water supply for human consumption and in general accounts for about 0.3% of the total surface water body sources. As such, the conditions of lakes have been in constant deterioration due to increased anthropogenic

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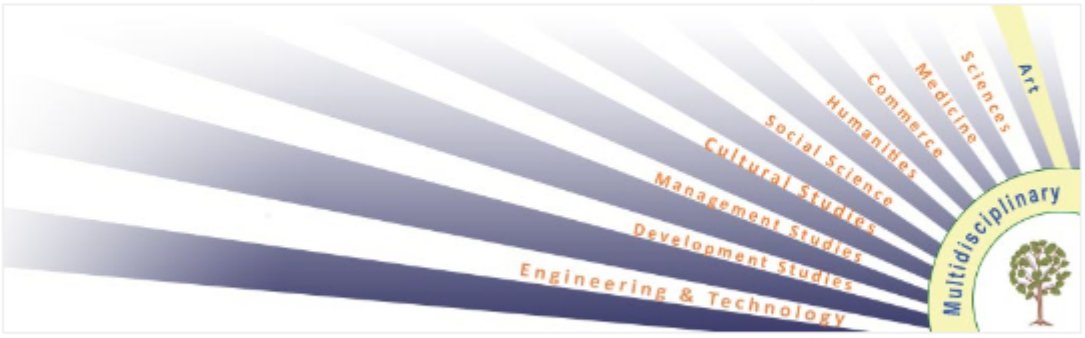

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THE ROLE OF GREEN CHEMISTRY AND ITS APPLICATIONS IN DAY-TO-DAY LIFE

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Abstract: Green chemistry can be defined as designing chemical products and processes that minimize or eliminate the use or development of hazardous substances. This is new revolutionary progress in the field of chemistry. It is a sustainable method that would protect our ecosystem from hazardous and toxic chemicals. This paper mainly highlights on applying green chemistry in day-to-day life like dry cleaning of cloths, Pulp bleaching, Eco-friendly color, Bio gas fuel etc. so that each individual could be made aware it. We study in this article is how green chemistry principles use in day-to-day life and improve the sustainable life and try to use Green chemistry principles and save our environment.

Keywords: Green Chemistry, Ecosystem, Environment, Eco-Friendly, Bio Gas Fuel.

Introduction

Anastas is known as the father of Green Chemistry. The idea of Green Chemistry was developed to minimize pollution in the 1990s[1]. Then in 1998, Paul Anastas and John C. Warner co-authored the pioneering book, Green Chemistry Theory and Practice [2]. They developed the Twelve Principles of Green Chemistry that can be grouped into "Reducing Risk" and "Minimizing the Environmental Footprint." Promoting Green Chemistry is a fundamental approach in shaping a sustainable economic growth model. As we know, hazardous chemicals are responsible for various environmental issues that include ozone depletion: it comes mostly from hydrocarbons and nitrogen oxides, global warming, smog formation, pollution[3], etc., and are also toxic to humans, plants, and animals. Green chemistry emerged from a variety of existing ideas and research efforts (such as atom economy and catalysis) in the period leading up to the 1990s, in the context of increasing attention to problems of chemical pollution and resource depletion. The active prevention of pollution through the innovative design of production technologies themselves[4][5]. The set of concepts now recognized as green chemistry coalesced in the mid- to late-1990s, along with broader adoption of the term (which prevailed over competing terms such as "clean" and "sustainable" chemistry)[6][7].

Many common feedstocks are depleting, such as petroleum and natural gas. The petrochemical industry uses petroleum and natural gas as feedstocks to make intermediates, which are later converted to final products that people use, such as plastics, paints, pharmaceuticals, and many others. Chemical products should be designed to preserve the efficacy of function while reducing toxicity. Due to the advancement in the understanding of chemical toxicity, it has become possible to design safer chemicals that give the desired level of performance, at the same time are within the permissible level of toxicity. Some major themes in green chemistry today include reducing our reliance on nonrenewable energy sources[8], reducing industrial carbon footprints, breaking down landfill waste, and taking advantage of abundant resources (waste) that nobody wants – like carbon dioxide, for example. Carbon dioxide has a deserved reputation of being a damaging greenhouse gas that is pushing up the rate of global warming. Green chemistry has been pivotal in coming up with ways to use CO_2 as a resource instead of having it become a waste product stuck in our air. For instance, chemists found that when CO_2 molecules are kept in a transitive state[8], or what's known as transcritical CO_2, the dynamic state in which CO_2 is at the point of converting from a liquid to a gas, it can be used as an industrial refrigerant to keep things cool.

1. Green Chemistry Goals[9]

So let us look a bit further into "Green Chemistry" to see what it is and how it might help achieve these goals. Green chemistry is a multidisciplinary approach to improving the chemical industry's environmental profile. The basic principles were defined by Paul Anastes (US EPA) and John C. Warner (Polaroid Company) in 1998 as[10]; and we include examples are as follows:

1.1. Prevent Waste

Instead of treating or cleaning up waste after they are created, it is always recommendable to prevent waste. Nowadays, chemists are involved in design techniques that reduce pollution and problems caused by hazardous waste by preventing waste production[11].

Example: Preventing waste can have, which is important in the kitchen and the chemical lab. Containers can be reused at home or for school projects, Reuse wrapping paper, plastic bags, boxes etc.


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Design and Prototype of the Electromagnetic Engine

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ABSTRACT: Making of electromagnetic engine is process of removing conventional parts in IC engine. electromagnetic engine produces driving power from reciprocating motion of the piston in the cylinder caused by electromagnetic force. The weight of engine is reduced because as these prototype model consists of only one piston and only one pole of magnet is used for running the engine. As you can see now current world trade going towards electronics and magnetic trade. It has been seeing to end its dependency on oil. Electromagnetic engine is absolute alternate for conventional fuel engine. The current effort lightning on development of electromagnetic engine and creating magnetic field in between magnet holder and permanent magnet. Number of expectations were carried out in developing an electromagnetic engine and output bring out by the engine were calculated.

KEYWORDS: Electromagnetic Engine, magnetic field, Conventional Parts, IC Engine

I. INTRODUCTION

Over a couple of decades, various researchers brought up several changes to the internal combustion engine. They focused mainly on improving efficiency & simultaneously reducing exhaust gases produced by the engine.

Most piston-powered engines are having a four-stroke cycle. A stroke is one complete down or one complete up movement of the piston. There are two downstrokes & two upstrokes for the IC engine of this design. There are four steps in one cycle which are Intake, compression, power, and exhaust. The piston is moved up and down on each stroke by the crankshaft. The crankshaft must turn twice for the four strokes mentioned above.

There is a shortage of fossil fuel in today's day & age, so this research paper is about an alternative to the traditional IC engine. An Electromagnetic Engine uses the power of electromagnets & causes no type of pollution also they are the dominant force when this world faces a huge crisis due to inadequate fossil fuels. Magnetism is the basic principle of working for an electromagnetic engine. In this engine, the cylinder head is an electromagnet & the piston head is attached with a permanent magnet.

The components of an electromagnetic engine include a cylinder block, piston, connecting rod, crankshaft, an electromagnetic coil, bearings, piston pin, flywheel, and power source.

II. RELATED WORK

1. For doing any work or research first of all we need to gather or collect information regarding the work. before going towards Electromagnetic Engine we must have sufficient knowledge about IC engine.
2. We collect the information and after doing some study on that information we understand the concept of electromagnetic field And properties of magnets which is really essential for our work.
3. For study, we come in contact with various journals and research work about the IC engine.
4. All the material that we need for our prototype is received from market.

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Design and analysis of front axle using Solidworks simulation

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Abstract *- A Front axle is one of the important parts in the vehicle which carries the weight of the vehicle, facilitates steering and absorbs shock due to irregular road condition. Front axle is designed to transmit the weight of the automobile from the spring of the front axle to front wheels so proper design of front axle is essential. This study describes the design and analysis of front axle. The front axle is deigned in CAD software and analyzed in Solidworks software We have studied the existing scenario of the front axle and analyzed the existing axle with different material using CAD software and Solidworkss simulation. We identified the problems in the axle and recommend the modifications. This front axle is analyzed for three different materials which are AISI 1010 steel, AISI 347 Annealed stainless steel, AISI 316L stainless steel. In this work the performance parameters such as stress, strain and displacement are measured by applying static load. The life cycle and strain value of the axle beam is analyzed.*

Key Words: **Front axle, Solidworks simulation, Modelling, Design improvement, Material optimization.**

1. INTRODUCTION

An auto industry is one of the important and key sectors of the Indian economy. The auto industry includes of automobile sector, auto components sector and includes commercial vehicles, passengers cars, multi-utility vehicles, two wheelers, three wheelers and related auto parts. The demands on the automobile designer increased and altered rapidly, first to meet system safety needs and later to reduce weight so as to satisfy fuel This Economy and vehicle performance requirement.

Engine location important to provide greater stability and safety at high speeds by lowering the centre of gravity of the road vehicles, the complete centre position of the axle is dropper. Front axle is subjected to both bending and shear stresses. In the static condition, the axle might be considered as beam supported vertically upward at the ends (at the centre of spring pads). Front wheels of the vehicles are mounted on front axles. Functions of font axle are listed below:

- It supports the weight of part of the vehicle.
- It facilitates steering.
- It absorbs shocks which are transmitted due to road surface irregularities.
- It absorbs torque applied on it due to braking vehicle.

1.1 Problem Definition

In the four wheel vehicle currently the front axle is subjected to non-uniform loading conditions and subjected to combination of stresses and because of that it is undergoing failure with respect to the desired durability. The front axle of the four wheel vehicle is always in the contact of water and the material used has the poor corrosion resistance. This can be reduced by surface protection methods such as paint.

Due to the irregularities on the road, the poor material selection and design the front axle undergoes failure and hence there is scope of improvisation in the front axle. Because of this reasons it is needed to develop CAD model of front axle and analyzing arm using Solidworkss simulation and testing the same under various non-uniform loading conditions with different material which we can achieve the desired durability.

1.2 Methodology

In this project the stress distribution will be carried out on the front axle by using Solidworkss simulation. For this, 3D modelling of front axle in Solidworkss is done by taking the actual dimensions of the axle. Performed static analysis in Solidworkss software and plot deflection, stresses. Design of front axle is changed by considering geometrical and material parameter to reduce stress and displacement. Best material chosen by comparing the present material and again analysis done with the material which have been chosen with the front axle.

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Design and Development of Humidity Controller for Prevention of Microbiological Spoilage in Vegetables

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Abstract - *Is the application of different sensors and hot air is gaining momentum in food processing. A hot air heating system was developed for drying vegetables. An Air heater boiler is used for heating of isolated cabin. In an isolated cabin, two fans are used which are connected to temperature sensors such as thermocouple and RTD. The mixing fans are used for proper circulation of hot air inside the panel and the exhaust fans is used to maintaining the temperature inside the panel. By using this system time required for drying is minimized as compared to the conventional process. We achieve the humidity level from 70% to 15% in 7 to 8 hours but the conventionally same process required 3 to 4 days.*

1. INTRODUCTION

The traditional sun drying process is common and widely embraced by all, however, the process is shown and sometimes incomplete under unfavorable climate conditions. Often the drying products are subjected to noxious effects of dust, dirt, and insect infestation. As a result of inadequacies of the open sun drying process, research efforts on drying agricultural produce have been on the increase over the years in order to develop and produce an economically effective, and systemized method of drying.

Owing to the higher level of exhaustion in the conventional energy sources such as chemical energy, thermal energy, and petroleum energy, saturated air energy is rapidly becoming the main alternative source of energy. The availability and accessibility of saturated air heat energy have greatly assisted in improving the techniques for the preservation of agricultural products.

Drying is a simple technique for preserving crops at a very low cost that might be otherwise spoilt. Although the saturated air collector is a very important component in the saturated airdrying system, much attention has not been drawn to dryer design previously. In principle, the performance of a saturated air dryer does not depends on the several operating conditions such as the climate condition, collector orientation, the thickness of the cover material, wind speed, length and depth of the collector, and the type of material used for the absorbers (ISHRE 2019) For this reason, this research has dealt with the optimization of the design, material selection, and required parameters to enhance the efficiency of the designed saturated air dryers.

2. PROBLEM DEFINITION-

Nowadays, there is a lack of awareness of the significance of humidity in our life. A suitable humidity level is needed to stabilize our environment and the world ecosystem including ourselves.

The relative humidity in the air should be monitored in order to maintain an ideal environment. Too high or too low humidity level condition can affect the quality of Fruits and Vegetables which needs extra care in dry condition all the time.

In day-to-day life, we need food products that have to be stored or preserved for more time. There are some food industries that try to preserve food items for long-term use, but these small-scale industries and agricultural poly houses cannot afford such expensive machinery for the preservation of food. Certain industries such as chickens eggs hatching or even the incubation of immature newborn chicks also need a controlled humidity condition.

Hence we would like to propose this device that can read the humidity level and the temperature in order to help us be aware of humidity conditions around us.

3. OBJECTIVES:

1. To resolve a problem related to the preservation of food in agriculture poly houses by reducing the effect of microbiological spoilage.

2. Getting more output for a unit of input. For example, reducing the energy costs of a facility.

3. Design and development of an affordable system for agricultural poly houses.

4. Maximum use of the already existing system and available material, connecting things and getting them working together.


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Comparative Study Of Performance Of 15% Neem Biodiesel On Single Cylinder Computerized Diesel Engine For Different Compression Ratio and Load

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Abstract : Requirement of diesel fuel is increasing day by day due to its advantages like low cost, high efficiency, low brake specific fuel consumption. In India about two third of petroleum products imported from oil and petroleum exporting countries. Diesel is non renewable source of energy and they are depleting with time in nature also causes pollution issues. So it is necessary to replace Diesel fuel by biodiesel which will gives contribution to improve Indian economy by use of biodiesel blends. Biodiesel is a renewable, biodegradable fuel manufactured domestically from vegetable oils, animal fats, or recycled restaurant grease. .It is also necessary to study the performance and emission of different biodiesel and find out the alternative for the diesel fuel. This paper focuses on performance of 15% neem biodiesel for different Compression ratio and load to find out optimum condition for performance of diesel engine. Performance of engine is measured by break power, break thermal efficiency, break specific fuel combustion and volumetric efficiency.

IndexTerms - Neem biodiesel, brake thermal efficiency, compression ratio, Computerized diesel engine.

1.INTRODUCTION

Energy is the basic need for economic development of any country and the largest source of energy in India after coal is Petroleum diesel. Fossil fuels are non-renewable sources where stored energy is released due to combustion, such as coal, natural gas, petroleum and they account for almost 80% of energy used worldwide. In India about two third of which is imported from oil and petroleum exporting countries. High dependence on imported fuel and due to frequent fluctuations in petroleum prices has made Indian economy insecure. This rapid development has necessitated the equal rapid expansion of transport sector (rail, surface, air and sea) which entail the use of internal combustion engines. Compression ignition engines namely diesel engines are supposed to be the most efficient engines as they achieve better fuel economy, lower carbon dioxides emissions than conventional spark ignition engines fuelled by gasoline. However, these engines tend to be more costly and emit high level of nitrogen oxides and particulate matter and are the major contributor to air pollution as it is extensively used in public transport and goods transport . *Biodiesel*, based on vegetable oils and animal fats is an alternate fuel which is considered safe. Biodiesel is a renewable, biodegradable fuel manufactured domestically from vegetable oils, animal fats, or recycled restaurant grease.. Biodiesel is a liquid fuel often referred to as B100 or neat biodiesel in its pure, unblended form. Like petroleum diesel, biodiesel is used to fuel compression-ignition engines. Blends of biodiesel and conventional hydrocarbon-based diesel are most commonly distributed for use in the retail diesel fuel marketplace. Much of the world uses a system known as the "B" factor to state the amount of biodiesel in any fuel mix.


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A Literature Review On Use Of Rice Husk Ash As Cementation Material

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Abstract: ***The cement has been the major building material in today's construction because of its binding and high compressive strength properties. Beside this, it also causes release of greenhouse gas carbon dioxide which causes global warming and other environmental issues. Researches were done to decrease the carbon footprint and use of waste material to be used in construction. The rice husk ash is waste materials which have shown promising results if replaced with cement in production of concrete. Previous researches done by researcher's shows that it enhances the corrosion resistance capability of produced concrete with RHA and some increase in compressive strength. In this literature review is related to increase in strength of concrete depending on age of concrete & percentage of RHA addition. Keywords: Rice Husk ash, Waste materials, Concrete, Cementation material, RHA, compressive strength***

I. INTRODUCTION

Concrete is widely and globally used throughout the history of humankind. Concrete is a mixture of sand and coarse aggregate combined together by a hardened paste of cement and water. The increased use of concrete is going to grow the demand for its ingredients' resources (cement, sand, and gravel). The high rate of concrete constituents is increasing rapidly and hence there is a requirement for an unconventional material that is low-cost and readily presented that will also give a similar or greater strength when used for concrete. Cement is one of the constituents of concrete which is costly and its production releases large amounts of CO_2 during its manufacturing. Manufacturing one tonne of cement releases about one tonne of CO_2 in the atmosphere while 1.6 tonnes of natural resources are required to produce about one tonne of cement. In many studies the cement is partially replaced by agricultural/industrial waste such as glass powder, sugar cane bagasse ash, rice husk ash (RHA), blast furnace slag, maize cob ash, millet husk ash, fly ash etc. in order to reduce cost, waste and CO_2 emissions while these resources are easily available.

II. OBJECTIVE

The main objective of this paper is to study Rice Husk Ash (RHA), it's property and potential to be used as a replacement of cement in concrete production

III. LITERATURE REVIEW

Following are the critical literature reviews on various papers based on experimental research work on use of Rice Husk Ash.D.V.

A. Reddy, Ph. D, P.E. and Marcelina Alvarez, B.SFourth LACCEI International Latin American and Caribbean Conference for Engineering and Technology (2006)

Detailed, the use of RHA will not only concrete production of better quality and low cost, but also reduce carbon dioxide (CO2) emissions from cement production. The partial replacement of cement by RHA will result in lower energy consumption associated with cement production. The potential market for rice husk energy systems and equipment has been studied by Velupillai et al. (1997). The reference also addresses economic development, urbanization, living standards, stricter environmental regulations, and consolidation in the rice milling industry is the reduction of certain traditional uses balls, and creating new opportunities for the use of the envelope. He discusses the potential use of rice husk Ash (RHA) as a cementations material in concrete mixes. RHA is produced by burning rice husk which is a by-product of rice milling. The ash content is about 18 to 22% by weight of rice hulls. Research has shown that concrete containing RHA in partial replacement of cement concentrations of 10% to 20% by weight of cement has superior performance characteristics compared to normal concrete. In addition, the use of ORS would result in a reduction in the cost of concrete construction, and the reduction of the greenhouse effect on the environment.


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Challenges of Energy and Environmental Sustainability

Abhijeet Pabale, Deepak Paithankar, Jitendra G. Shinde, Gajendra J. Pol, Avadhut R. Jadhav, M. Ramaganesh

Abstract

The concepts of energy and climate, as well as the related security issue, are evaluated by taking into account authentic advancement processes, notably the concept of maintainability, and the multi-layered construction of the potential of supportability is revealed in this study. The majority of the supportability issue revolves around how long the usage can be sustained for under normal asset constraints. This current situation, which draws supportability closer merely from a financial standpoint, has resulted in the link of manageability with monetary development/advancement, and maintainability and effectiveness are assessed together. Indeed, the biological economy concept has emerged as a response to the current situation. This study investigates the concerns of energy and climate management. It also investigates the relationship between energy use and GDP, the conflict between energy and climate, and the general public's future energy demands.

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A comparative study of project risk management with risk breakdown structure (RBS): a case of commercial construction in India

Muzammil Bepari, Balkrishna E. Narkhede & Rakesh D. Raut

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Abstract

The construction industry deals with the growing complexity and dynamism exposed to numerous and interdependent risks which, evolve throughout the project. In most risk management processes, risk identification forms a long list or matrix, which it difficult in identifying more influenced risks. Preparing a risk list or risk matrix in the identification process has become inadequate for prioritizing risks. The construction industry is classified as commercial, industrial, and residential; identifying and managing the project risk for them on a common platform is difficult. In the present work risk breakdown structure (RBS) tool is used for the brief, clear identification of risks by interviewing and brainstorming with the experts involved in three commercial construction projects. It provides a means for grouping all possible individual project risks into risk categories (RC), linked by father/son relations, and risk events (RE) form the hierarchy. Further, analyzed to find the impact on the three main pillars of sustainability: Environmental, Financial, and Social. The plotted results are further structured with the analytical hierarchy process (AHP) and found the global weight of each RC's. The method is applied to illustrate the principle of process and highlights risk identification and its assessment in the Indian commercial construction industry.

Keywords: Commercial construction risk management RBS AHP

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