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A Fuzzy Lattice System to Trust Management in Mobile Grid

Grantej Vinod Otari, Vijay Ram Ghorpade, Sachin Harakhchand Dhanani

Abstract : Mobile Grid is a crossbreed technology formed by amalgamation of the two prominent technologies namely mobile technology and grid technology that enable sharing and collaboration of mobile resources cooperatively, transparently, efficiently, reliably and securely. Mobile Grid considers the mobility issues and overcomes the constraints and deficiencies in both the technologies. However, this heterogeneous, dynamic and open mobile grid network is more prone to malicious and selfish nodes inside and outside the network. Hence, a vigorous security mechanism is needed that considers different security threats and provide different levels of security services. Here, we propose one such preventive security service based on Trust Management. The proposed trust management service uses a novel fuzzy lattice approach for trust estimation of the nodes in the network. A node with high trust value is allowed to participate in the network. A malicious node having low trust value is prevented from performing the task. A fuzzy lattice approach can compute incrementally the same intervals in the training data independent of the order of presentation within a short period. Experimental analysis of the fuzzy lattice approach shows that the proposed approach outperforms most of the existing approaches based on fuzzy logic.

Keywords: Mobile Grid, Trust Management, Fuzzy Lattice

I. INTRODUCTION

In order to meet the fluctuating and on-demand resources requirements one of the most promising technology has been in the forefront in the form of Grid Computing. Grid computing allows to share and allocate heterogeneous and distributed resources dynamically. This results in an open and dynamic environment providing computational and storage resources in the form of grid services. The grid service providers need to ensure a secure grid environment to the users of the remote resources for executing their tasks remotely and storing the data on the remote storage resources securely.

With the exponential growth of wireless electronic devices such as smart phones, PDA, laptops etc. along with the high speed internet many recent advents have been done by the researchers and industry to enrich the new comping paradigm of mobile computing. Mobile computing allows collaboration of mobile devices having limited resources such as battery, processor, input/output interfaces and instability in data transfer to solve a common problem. Providing security of such limited and precious resources in mobile devices which are being shared in a highly dynamic, open and heterogeneous environment is a challenging problem.

The Mobile Grid [1] is a crossbreed technology incorporating grid of mobile devices thus addressing mobility issues and providing mobility to the resources and users in a continuous,

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transparent, secure and effective manner. This allows us to form a self-organized grid system consisting of an underlying ad-hoc network of mobile devices interconnected by wireless network and constructing random and dynamic network topology. Thus the security infrastructure in the mobile grid system should deal with various aspects of security issues both in grid computing and mobile computing.

In the mobile grid network, every node plays the dual role as client and server. Thus mobile grid resources are exposed to distributed and open dynamic environment. However, such mobile grid networks are extremely prone to malicious participants dispersing false contents causing unrecoverable security threat to the system. A viable solution is to develop a trust model which provides a mechanism to establish a trusted relationship between the participating resources and allowing them to share the task and data less securely collaboratively. In the trust model, every peer assesses every other peer in the network after each trans-action. Then a peer selects the trustworthy peer for further transaction based upon its past transaction experiences.

Evaluating trustworthiness of a peer in the mobile grid is a complex problem as trust is a linguistically fuzzy concept. To solve this complex problem of trust calculation fuzzy logic is a good alternative solution. Also it has been observed that all the peers in the network are not always cooperative and may send false feedback to disrupt the reputation of the peers and contribute to the errors in global trust calculation. Thus a robust trust estimation model is needed that detects malicious peers and check the credibility of the recommendations received from such peers. In addition the trust model should also deal with the estimation of trust of the newly joined node in the network.

In this paper, we have designed a novel trust management system based on a fuzzy lattice approach. The proposed model uses multiple attributes of the mobile node to evaluate the direct trust value. These input attributes indicate the capability of the node to perform the specific task based on the currently available resources and its previous performance. The trust model then estimates indirect trust by collecting the recommendations from the neighbors in the network and considering the credibility of the recommenders. Finally, the obtained direct trust value and indirect trust value is aggregated to compute the global trust of a node.

II. RELATED WORK

There exists a vast and diverse literature for development of trust model. Numerous possible approaches and measures are used for trust calculation. Some approaches use continuous values to measure the trust, while some methods use discrete values. Some models are based on probabilistic approach whereas some others use threshold based approach.

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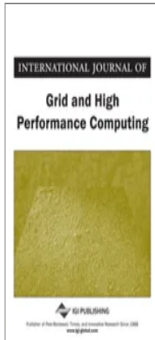
Grid and High Performance Computing



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Application Checkpointing Technique for Self-Healing From Failures in Mobile Grid Computing [ⓧ]

Amit Sadanand Savyanavar (Dr. D.Y. Patil College of Engineering and Technology, Shivaji University, Kolhapur, India) and Vijay Ram Ghorpade (Bharati Vidyapeeth's College of Engineering, Kolhapur, India)

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Abstract

A mobile grid (MG) consists of interconnected mobile devices which are used for high performance computing. Fault tolerance is an important property of mobile computational grid systems for achieving superior arrangement reliability and faster recovery from failures. Since the failure of the resources affects task execution fatally, fault tolerance service is essential to achieve QoS requirement in MG. The faults which occur in MG are link failure, node failure, task failure, limited bandwidth etc. Detecting these failures can help in better utilisation of the resources and timely notification to the user in a MG environment. These failures result in loss of computational results and data. Many algorithms or techniques were proposed for failure handling in traditional grids. The authors propose a checkpointing based failure handling technique which will improve arrangement reliability and failure recovery time for the MG network. Experimentation was conducted by creating a grid of ubiquitously available Android-based mobile phones.

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1. Introduction

Recent advances in the computing power of mobile devices has made it feasible to generate a true mobile grid (MG) (Savyanavar et al., 2013) consisting of only mobile devices for high performance computations. Collaborative computing using MG involves a number of mobile devices like laptop, cell phones, PDA, wearable computing devices and mobile robotic systems. MG provides a framework for numerous real-life applications in the areas of healthcare, disaster management and military applications. Addressing failure of nodes is more critical in MG than conventional wired grids due to host mobility, dynamicity, less reliable wireless links and frequent disconnections in mobile systems. Mobility (Savyanavar et al., 2015) of the nodes aggravates the reliability issue in MG. MG follows peer-to-peer computing architecture (Tung et al., 2012). Due to peer volatility, peer failure is a critical issue in peer-to-peer computing. In such networks, a peer may leave unpredictably. This peer may be executing a subtask, which would fail abruptly and hence affect the overall execution of the application. An efficient fault tolerance mechanism is pivotal for successful execution of the application. Replication and rollback (Treaster et al., 2005) are two failure handling

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RESPONSIVENESS OF HEIS TO INDUSTRIAL REVOLUTION 4.0

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ABSTRACT

Higher Education (HE) is the integral part of developed and developing countries. HE ensures world about well trained, skilled and creative manpower. There is direct relation of revolution in industry and Higher Educational Institutes (HEIs) as graduates contributes in new innovative technologies by means of research, development, testing and servicing. Hence, it is the responsibility of HEIs to mold itself in terms of resources, curriculum, teaching learning mechanism, assessment tools, students skill development, lifelong learning strategies, interaction with stake holders etc. This paper puts light on some of these aspects where HEIs which are affiliated to universities has to respond immediately as a response to advancements in Industrial Revolution 4.0.

1. INTRODUCTION

Any revolution is indication of liveliness in that field. World has observed three industrial revolutions and experienced magic of it in industrial production and in turn on livelihood of all livings. The first industrial revolution is derived by Newton's laws of motion which made it possible to design steam engines that atomized much of the work done by humans and made humans more productive (Bo Xing and Tshilidzi Marwala 2018, p.1; Nancy W. Gleason 2018, p.2). The second industrial revolution which is recognized as electric generation has a impact of Faraday and Maxwell's theory of magnetic and electric forces. The discovery of transistor given birth to third industrial revolution which is known as electronic generation. It gifted world with Computers and Internet. Fourth industrial revolution named 'Industry 4.0' started in early 2000s with Germany's manufacturing industry. This has the power to change many things across a broad spectrum. It will transform industries to a large extent such that much of the work that exists today will not exist in next 50 years. According to survey by Deloitte and Forbes Insights, in Industry 4.0 revolution the daily lives will be full of smart technologies as an effect of revolution in digital and physical technological world. Though it will create vast possibilities and opportunities; it will also create uncertainty. According to opinion of Chun-Yuan Gu, in this revolution the knowledge, which takes an organization decades to gain, becomes more accessible to new organizations with less experience and with the right technology (Deloitte and Forbes Insights 2018, p.22).

The education sector will not stand apart from this advancement of Industry 4.0. This may introduce new requirements for the profile and qualification of graduates. It may demand even more than before, people's capacity for initiative, entrepreneurship skills, digital literacy, critical thinking and ability to define personal learning needs and identify possible sources for such learning. To produce such graduates and to cope up with requirements for the same is now a most demandable task for HEIs. HEIs has focus on meeting different needs and requirements of various target groups. But to produce the graduates of above qualities, HEIs has to be flexible and always there is space for a well profiled, professional HEIs to introduce such flexibilities. New patterns and tools of learning as well as assessment may be introduced to produce more flexibility. It may need a substantial shift in curricula development. The HEIs has to transform from "school" to a "hub" connecting various stakeholders within their community, allowing suitable provisions for combination of teaching, learning, research and knowledge exchange involving partners and collaborators from outside education (Alexandre Wipf 2017, P.7). While all higher education institutions will put some focus on meeting the digitalization agenda, there was a shared belief that professional higher education should still find suitable approaches to address different target groups needing more profession-specific skills and competences. At the same time, the prevailing expectation is that the digitalization agenda will enhance the opportunities for internationalization and opening new markets for those who will be ready.

The rest of the paper is organized as follow: second section summarizes the response of HEIs to first 3 industrial revolutions, third section briefs the responsiveness of HEIs to Industrial Revolution 4.0 and fourth section presents conclusion.

2. RESPONSIVENESS OF HEIS TO FIRST THREE INDUSTRIAL REVOLUTIONS

The first industrial revolution based on steam engines brought a dramatic shift in the classical education. A curriculum with more diverse degree options and new general education programs designed to produce breadth of study through the selection from a variety of elective courses. The second industrial revolution intended to open the industrial classes in education system to create newly trained technicians and engineers. In third

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Convolutional neural networks for leaf image-based plant disease classification

Sachin B. Jadhav, Vishwanath R. Udipi, Sanjay B. Patil

Abstract

Plant pathologists desire soft computing technology for accurate and reliable diagnosis of plant diseases. In this study, we propose an efficient soybean disease identification method based on a transfer learning approach by using a pre-trained convolutional neural network (CNN's) such as AlexNet, GoogleNet, VGG16, ResNet101, and DensNet201. The proposed convolutional neural networks were trained using 1200 plant village image dataset of diseased and healthy soybean leaves, to identify three soybean diseases out of healthy leaves. Pre-trained CNN used to enable a fast and easy system implementation in practice. We used the five-fold crossvalidation strategy to analyze the performance of networks. In this study, we used a pre-trained convolutional neural network as feature extractors and classifiers. The experimental results based on the proposed approach using pre-trained AlexNet, GoogleNet, VGG16, ResNet101, and DensNet201 networks achieve an accuracy of 95%, 96.4%, 96.4%, 92.1%, 93.6% respectively. The experimental results for the identification of soybean diseases indicated that the proposed networks model achieves the highest accuracy

Keywords

AlexNet CNN; Deep CNN; DensNet201 CNN; Disease classification; GoogleNet CNN; Machine learning; ResNet101 CNN; VGG16 CNN



Identification of plant diseases using convolutional neural networks

[Sachin B. Jadhav](#) , [Vishwanath R. Udupi](#) & [Sanjay B. Patil](#)

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Abstract

Plant pathologists desire an accurate and reliable soybean plant disease diagnosis system. In this study, we propose an efficient soybean diseases identification method based on a transfer learning approach by using pretrained AlexNet and GoogleNet convolutional neural networks (CNNs). The proposed AlexNet and GoogleNet CNNs were trained using 649 and 550 image samples of diseased and healthy soybean leaves, respectively, to identify three soybean diseases. We used the five-fold cross-validation strategy. The proposed AlexNet and GoogleNet CNN-based models achieved an accuracy of 98.75% and 96.25%, respectively. This accuracy was considerably higher than that for conventional pattern recognition techniques. The experimental results for the identification of soybean diseases indicated that the proposed model achieved highest efficiency.

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Soybean leaf disease detection and severity measurement using multiclass SVM and KNN classifier

Sachin B. Jadhav, Vishwanath R. Udup, Sanjay B. Patil

Abstract

Soybean fungal diseases such as Blight, Frogeye leaf spot and Brown Spot are a significant threat to soybean plant due to the severe symptoms and lack of treatments. Traditional diagnosis of these diseases relies on disease symptom identification based on naked eye observation by pathologists, which can lead to a high rate of false-recognition. This work presents a novel system, utilizing multiclass support vector machine and KNN classifiers, for detection and classification of soybean diseases using color images of diseased leaf samples. Images of healthy and diseased leaves affected by Blight, Frogeye leaf spot and Brown Spot were acquired by a digital camera. The acquired images are preprocessed using image enhancement techniques. The background of each image was removed by a thresholding method and the Region of Interest (ROI) is obtained. Color-based segmentation technique based on K-means clustering is applied to the region of interest for partitioning the diseased region. The severity of disease is estimated by quantifying a number of pixels in the diseased region and in total leaf region. Different color features of segmented diseased leaf region were extracted using RGB color space and texture features were extracted using Gray Level Co-occurrence Matrix (GLCM) to compose a feature database. Finally, the support vector machine (SVM) and K-Nearest Neighbour (KNN) classifiers are used for classifying the disease. This proposed classifier system is capable to classify the types of blight, brown spot, frogeye leaf spot diseases and Healthy samples with an accuracy of 87.3% and 83.6 % are achieved.

Keywords

image processing

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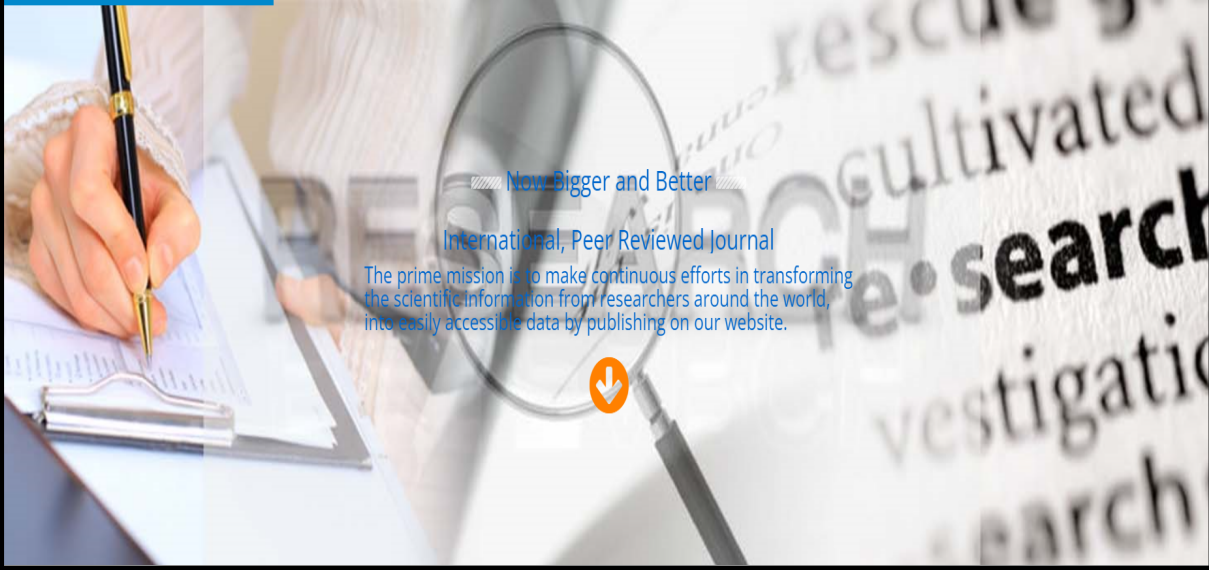


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Designing a Data Structure Utility List and High Utility Sequential Pattern for One phase in Data Mining

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ABSTRACT

High utility item set mining finds item set from the database which have their utility no less than minimum threshold, the most significant task in data mining is the process to discovering the different type of pattern algorithm that generate the mining pattern. Sequence of database rather than strings and it can capture the set of sequential pattern. Data mining consist extracting information from data stored in databases to understand the data. Pattern mining consists of discovering interesting, useful, and unexpected pattern in databases.

Keywords : Data mining, Database, sequential pattern mining, High utility, item set

I. INTRODUCTION

In sequential pattern mining that pattern can maintain their sequential. Item set may generating in sequential manner without any duplication. Data mining consist extracting information from data stored in databases to understand the data. Pattern mining consists of discovering interesting, useful, and unexpected pattern in databases. Sequential pattern mining is a data mining is a data mining task specialized for analyzing sequential data to discover sequential pattern. Efficient Mining of High Utility Item set from large data set these algorithm search large transactional weighted utilization item in transaction database. It is used to mine the complete set of high utility item set. Implied a structure named High Utility of Pattern tree for maintaining essential information about utility mining.

Each node in enumeration tree will be contain generating different pattern that will be useful for utility of sequential pattern mining to maintain this pattern in linear data structure will be developed. It will be contain information about each item relevant of pattern. . High utility pattern that can be finding

the pattern from database that have a utility value. The utility of pattern defines defines the its importance and makes mined pattern.

1.1 MOTIVATION:

Efficient Mining of High Utility Item set from large data set these algorithm search large transactional weighted utilization item in transaction database. It is used to mine the complete set of high utility item set. Implied a structure named High Utility of Pattern tree for maintaining essential information about utility mining. It avoids scanning of multiple times generating pattern during mining process. Identifying better estimate of the utility value of pattern and systematic search of space for pattern using the estimate. Data structure which helps into computation of better estimate will improve the performance of mining algorithms by effectively search space.

II. OBJECTIVES

- Generating the High Utility Sequential Pattern in one phase

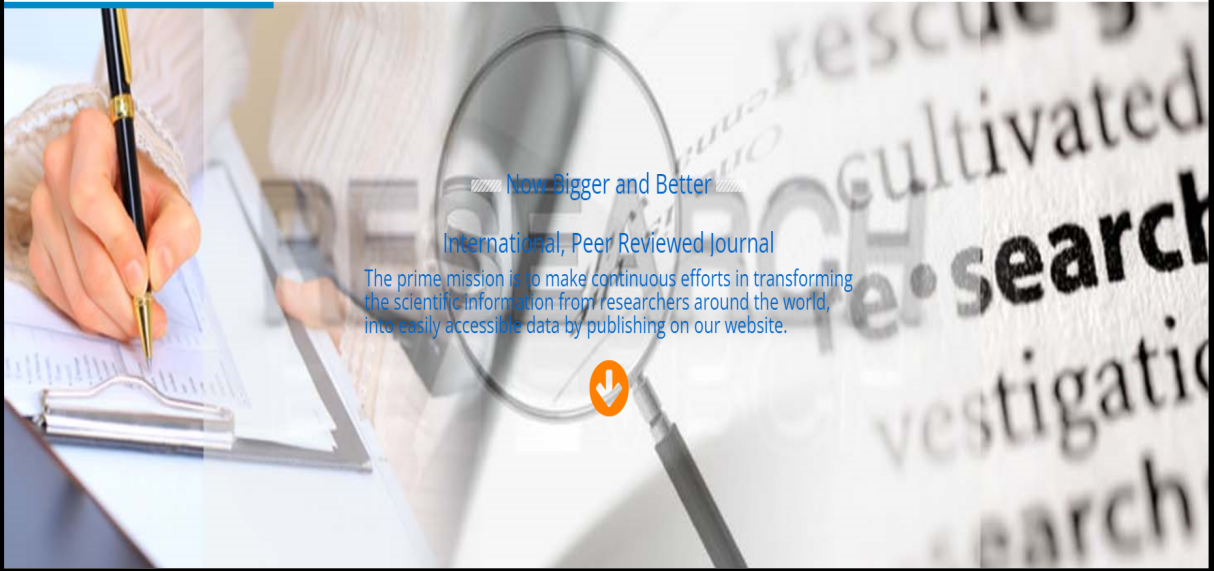


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Auto Determination of K in KMEANS with MAP-REDUCE for Numerical and Text Datasets

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ABSTRACT

Data mining is the process of automatically discovering useful information in large datasets. Clustering analysis is a very important branch in data mining. Cluster analysis based on the data objects and their relationships and grouping of data objects. Clustering very large datasets is a challenging problem for data mining and processing. Map Reduce is considered as a powerful programming framework, which significantly reduces executing time by dividing a job into several tasks, and executes them in a distributed environment. K-Means, which is one of the most used clustering methods, and K-Means based on Map Reduce is considered as an advanced solution for very large dataset clustering. However, the executing time is still an obstacle due to the increasing number of iterations when there is an increase of dataset size and number of clusters. The traditional k-means is computationally expensive, sensitive to outliers and has an unstable result hence its inefficiency when dealing with very large datasets. Solving these issues is the subject of much recent research work. In this paper, we propose an Auto determination of K in KMEANS with MAP-REDUCE for numerical and text datasets in order to adapt it to handle large-scale datasets by reducing its execution time. In addition, we proposed algorithms to find the initial centroids automatically and cluster are formed on both numerical and text both datasets.

Keywords : Initial Centroids, Clustering, Data mining, Data sets, K-means clustering, Map-Reduce.

I. INTRODUCTION

Big Data is evolving term that describes any voluminous amount of structured, semi-structured and unstructured data. Big data challenges include capturing data, data storage, data analysis, search, sharing, transfer, visualization, querying, updating, information privacy and data source. Big data represents the information assets characterized "5Vs", volume (size of data set), variety (range of data type and source), velocity (speed of data in and out), value (how useful the data is), and veracity (quality of data)

to require specific technology and analytical methods for its transformation into value. It creates challenges in their collection, processing, management and analysis. Big data to the use of predictive analytics, user behaviour analytics, or certain other advanced data analytics methods that extract value from data, and seldom to a particular size of data set. Big data analytics is the process of examining large and varied data sets to uncover hidden patterns, unknown correlations, market trends, customer preferences and other useful information that can help organizations make more-informed business decisions. As new data



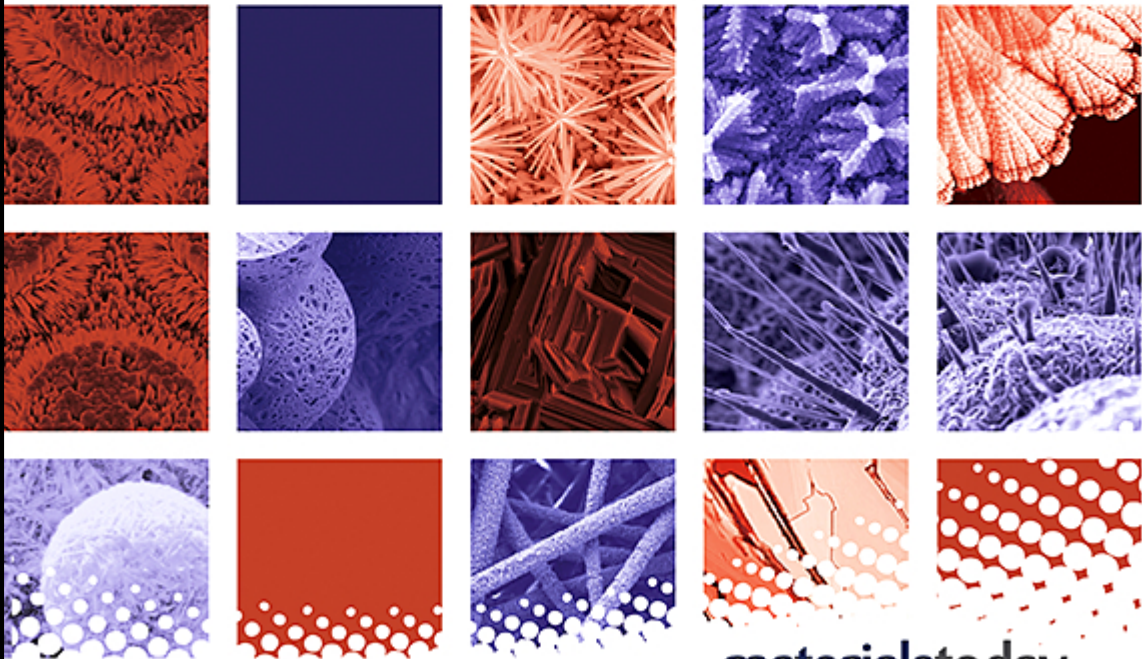
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Parametric Optimization Of Minimum Quantity Lubrication In Turning Of AISI 4340 Using Nano Fluids

P.B. Patole^a, V.V. Kulkarni^b  

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Abstract

Modern machining industries demand for improved surface roughness from micro level to nano level along with increased tool life and reduced cutting temperature and force during machining. Therefore, the aim of this research work is focused on optimization of Minimum Quantity Lubrication (MQL) parameters using nano fluids in turning of AISI 4340. A study of effect of MQL parameters on the surface roughness of AISI 4340 was carried out using nano fluid such as Multi Walled Carbon Nano Tube (MWCNT). In the experiment conducted, four values of pressure, four values of flow rate and two types of nano fluids were used. The chemical composition of the work material was tested using arc spectrometer and verified to be of grade AISI 4340. The test pieces were turned on a CNC lathe machine under MQL mode using nano fluid with different levels of MQL parameters by using Taguchi L16 orthogonal array. The surface roughness of the machined surface was measured using surface measurement tester. Taguchi methodology was used to optimize MQL parameters. The results were analyzed using Analysis of Variance (ANOVA). From result analysis, it was shown that, cutting fluid (Nano fluid) played a major role in producing lower surface roughness followed by flow rate whereas pressure has least significance in producing lower surface roughness under MQL using nano coolant. It was observed that ethylene glycol with nano fluid (MQL1) showed lowest surface roughness as compared to water with nano fluid (MQL2). The optimum condition under MQL mode with nano fluid obtained as pressure (5 bar), flow rate (140 ml/hr.) and cutting fluid type 1. From result analysis it is also observed that, ethylene glycol as a base fluid with nano fluid is a most significant factor affecting surface roughness. The regression model between experimental and predicted surface roughness is also developed.



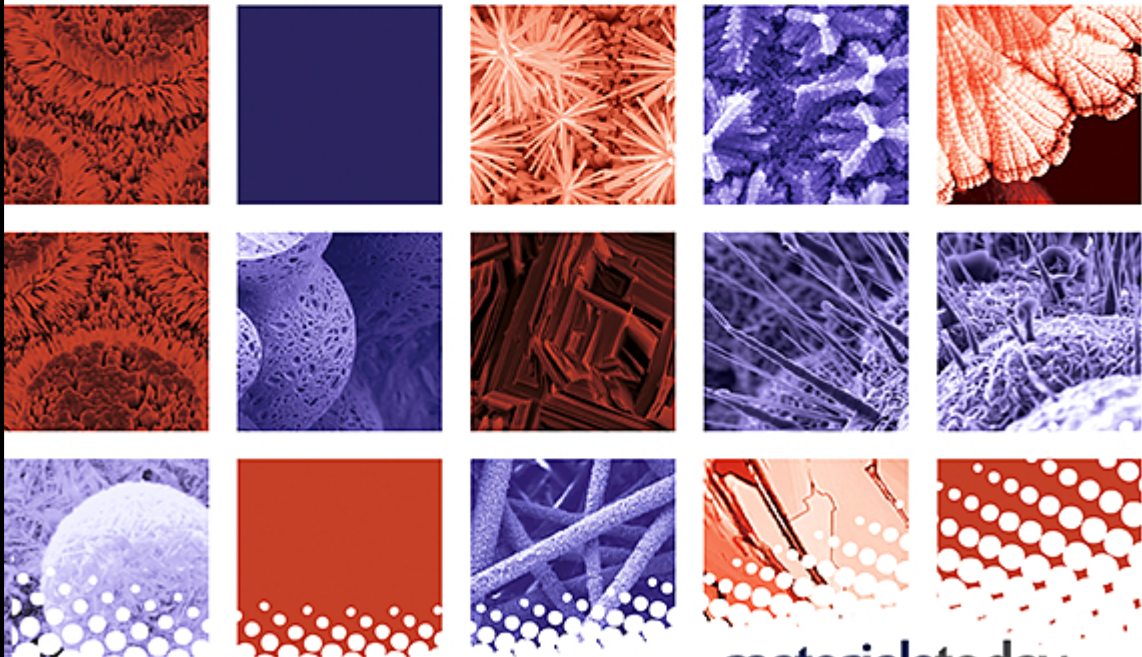
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Optimization of Process Parameters based on Surface Roughness and Cutting Force in MQL Turning of AISI 4340 using Nano Fluid

P.B. Patole^a  , V.V. Kulkarni^b

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Abstract

The aim of this research work is focused on optimization of process parameters under Minimum Quantity Lubrication (MQL) using nano fluid in turning of AISI 4340. A study of effect of process parameters in turning of AISI 4340 under MQL condition with nano fluid (Multiwalled Carbon Nano Tube) on the cutting force generated and machined surface roughness is carried out. In the experiment conducted, five values of feed rate, three values of depth of cut, two values of cutting speed and tool nose radius respectively, are used. The test pieces were turned on a CNC lathe machine under MQL mode using nano fluid with different levels of process parameters by using full factorial design of experiment orthogonal array. The surface roughness of the machined surface was measured using surface measurement tester. Taguchi methodology was used to optimize process parameters. The results were analyzed by using Analysis of variance. From result analysis, it was found that, feed rate played a major role in producing lower surface roughness followed by depth of cut whereas cutting speed has least significance in producing lower surface roughness under MQL using nano coolant. It was observed that MQL with nano fluid (MWCNT) showed lowest surface roughness as compared to conventional flood system. Thus, with proper selection of process parameters under MQL mode with nano coolant, it is possible to achieve good surface roughness, reduce tool wear while maintaining the cutting forces and temperatures at reasonable levels.



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A Real Time Solution to Flood Monitoring System using IoT and Wireless Sensor Networks

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Prof. Mrs. Shagupta Mulla⁶

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Abstract – There are some places that are more prone to flooding than other places, the implementation of flood alert systems near any major water area or body of water provides critical information that can protect property and save lives. Of course, the most effective flood warning methods are very costly and requires high maintenance and also requires highly qualified employee to operate it.

Nowadays, there is no idea about when flood will occur so there is need to prewar people who are near the flooded area. Hence we are design this system to inform the people about the upcoming flood through notification and alert messages. For that purpose we are going to use some sensors which will helpful to give information about the flood. As well as we are going to give all safe places near the user location where user can migrate. Always we are using map for trace safe location. This system provides actual implementation to organizations, communities and individuals interested in establishing and operating flood monitoring and warning systems.

Key Words: Flood Monitoring, Node MCU ESP8266, Sensors, Android Application, Web Application

1. INTRODUCTION

To develop A Real Time Solution to Flood Monitoring Using IoT and Wireless Sensor Network, we proposed a flood warning system which requires attention to three basic factors: Data collection via gaging, data processing, and the hardware and software required, and the dissemination of flood warning information. While automated flood warning systems are often surprisingly inexpensive to implement, the primary factor determining cost for any such system is the number of gage site locations.[9]

Severe flooding affected Indian state of Kerala due to unusual high rain during monsoon season. It was the worst flooding in Kerala in nearly a century. In which over 373 people died within fortnight. Thirty-five out of 42 dams within the state open for the first time in history. Kerala received heavy monsoon rainfall on the midevening of August and resulting in dams filling to capacity in the first 24 hours of rainfall the state received 310 mm of rain.

2. LITERATURE REVIEW

Existing system refers to the system is to develop a local real-time river flood monitoring and warning system for the selected communities near river. This study focus only on the detection and early warning alert system (via website and/or cell phone text messages) that alerts local subscribers of potential flood events.

For this project, we have referred some IEEE papers and what we have studied in these papers is shortly described as follows:

In this paper [10],[11],[12] proposed an IoT based water monitoring system that measure water level in real time. The prototype is based on idea that the level of water can be very important parameter when it comes to the flood occurrences especially in disaster prone area. A water level sensor is used to detect the desired parameter and if the water level reaches the parameter the signal will be freed in real time to social network like Twitter. A cloud server was configured as data repository. The measurement of water level are displayed in remote dashboard. The proposed solution with integrated sensor system that allows inner monitoring of water quality. Alerts and relevant data are transmitted over the internet to a cloud server and can be received by user terminal owned by consumer. The outcome of water measurement is displayed in web based remote dashboard.

In this paper [11], presents a neuro-fuzzy controller based on flood monitoring system using wireless sensor network. The distributed sensor nodes used IEEE 802.15.4 protocol, to collect sensor information such as water level data from the river. The sensor information is sent to distributed alerts center via Arduino microcontroller at Xbee Transceiver. At the distributed alert center, Xbee transceiver and Raspberry pi microcomputer are used to generate flood alert based on sensor information and detect flood data and this data are stored in database. This is not cost effective system. And performance also weak compared to our system.



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EFFECT OF ZONE FACTOR ON SEISMIC PARAMETERS OF RC BUILDING

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ABSTRACT: Considerable development in earthquake resistant design has been taken place in recent past. As a result Indian seismic code IS: 1893 has also been revised in year 2016. This paper presents the seismic load estimation for multistory RC buildings as per IS: 1893-2002 and IS: 1893-2016 recommendations. In present study G+12 and G+16 RC Ordinary Moments Resisting Framed buildings (OMRF) were analyzed. The study of effect of zone factor on seismic parameters is performed by seismic coefficient method laid by these two versions. The results were compared in terms of base share, storey drift, time period, storey shear and storey displacement and conclusion were drawn. It is concluded that such study needs to be carried out for individual structure to predict seismic vulnerability of RC framed buildings that were designed using earlier code and due to revisions in the code provisions may have observed vulnerable to earthquake

Keywords: Earthquake, seismic zone, vulnerability, seismic parameters, seismic load.

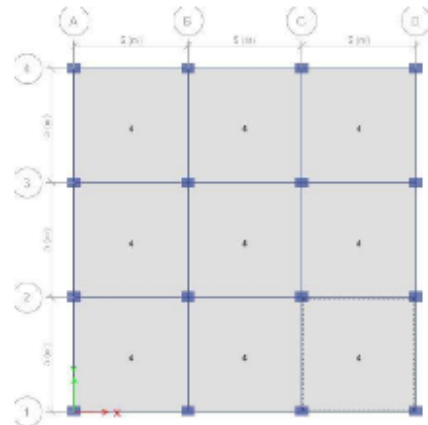
I. INTRODUCTION

There has been an increased awakening among experts, owners, designers, engineers and the society at large about the significance of earthquake protection of structures. At the same time, there has also been persistent research & trainings in the field of seismic engineering, demanding updating of codes and standards from time to time. IS 1893 (Part 1) and IS 13920 has been recently revised, bringing into state of practice, the progress made in research. There is an often-repeated saying, "Earthquakes don't kill people, buildings do." One can't control the seismic hazard in the community where one lives or work, but can certainly influence the most important factor in saving lives and reducing losses from an earthquake by the adoption and enforcement of up-to-date building codes. In present study G+12 and G+16 RC ordinary

moments resisting framed buildings were analyzed. The study of effect of zone factor on seismic parameters is performed by using seismic coefficient method laid by IS 1893:2002 and IS 1893:2016. The results were compared in terms of base share, storey drift, time period, storey shear and storey displacement and conclusion were drawn.

II. DESCRIPTION OF BUILDINGS

The structures representing medium and high rise reinforced concrete framed buildings are considered in this Study. Utility of building is residential building, RC OMRF buildings G+12 and G+16 are considered. All buildings have similar plan dimension 15m X 15m as shown in figure 1. Building is resting on medium soil. Floor to floor height is 3 m, the thickness of slab is 150 mm and size of all columns is 450 mm X 600 mm whereas size of all beams is 230mm X 600 mm. The Imposed load on floor is 3kN/m² and imposed load on roof is 1.5 kN/m². Floor finishes is 1 kN/m² and roof treatment load is 1.5 kN/m². The infill walls are 230 mm thick all around. Damping factor was 5%. The grade of concrete and steel is M20 and Fe415 respectively. Buildings are first designed for gravity loads only as per IS 456:2002.





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NOS-Network for Organ Sharing

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Prof. Mr. Sagar Patil⁶

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Abstract - There is a shortage of organs for donation in India, not because of lack of organs but because of the lack of the donors who could have saved a life. Organ donation in India is not very popular because of the lack of awareness as well as organs cannot be available at proper time but the need for organ donation is huge.

For this purpose we are making a web-based model for donating organ and finding desired organ easily and quickly. Hospitals have to register to NOS website. People who are interested can registered themselves to the system through registered hospitals. After doing registration once, hospital can login anytime. Doctors will get information about available organs, quantity of organs, location etc. quickly.

Key Words: NOS, Organ, Hospital, Donor, Seeker

1. INTRODUCTION

Organ donation in India has always been on a lower side and around 5 lakh people die every year in India due to unavailability of organs. Lack of knowledge, awareness, and infrastructures are some of the reasons behind the shortage of organ donation.

People might hear about organ donation, but do they really know what it means to those who really need organ transplantation. According to the National Transplant Resource Centre, there are thousands of patients on the waiting list for kidney, heart and lung transplants. However, one in three patients on the waiting list dies before a donor is found. Campaigns by the government to educate peoples on the importance of becoming organ donors were launch, but most people were still reluctant to do so. At present, out of the 1,50,000 patients requiring kidney transplants across India, only 200 get kidneys by the way of donations from the deceased.

The NOS is a web based model for donating organ and finding desired organ easily and quickly. This system is used only by the authorized doctors in authenticated hospitals. At first, hospital must register to NOS website to access this system. People

who want to become donor can register their details to through any registered hospitals. Registered hospitals can login any time.

2. LITERATURE REVIEW

There is a huge gap between the number of patients who need organ transplants and the number of organs that are available. The details of such cases are, however, not maintained locally. For this purpose 'NOS' plays an important role. The people who are interested to donate organ can contact with donor hospitals. The donor hospitals must have to register with 'NOS' website. The people who needs organ have to contact with recipient hospital and recipient hospital must register with 'NOS' website.

For this project we have referred some IEEE papers and what we have studied in this paper is shortly described as follows:

"Increasing Human-Organ Transplant Availability: Argumentation-Based Agent Deliberation" highlights human-organ transplantation is the only effective therapy for many life-threatening diseases. However, despite an increase in transplantation successes, the lack of a concomitant increase in organ availability has led to growing disparity between supply and demand. Much research has thus focused on defining and implementing policies. [1]

"Promoting and Assisting Eye Donation Using Mobile Application" highlights the problems and misconceptions, religious views, illiteracy and many factors which are root causes that prevent eye donation. [2]

"Issues in Ethics" paper focuses on difficult ethical questions regarding to organ donation. It contains Limited Supply of Organs, Financial Incentives, Animal Donors, Organ from Healthy Donors, The Changing Physician - Patient Relationship. [3]

"Characterizing Organ Donation Awareness From Social Media" suggest that the most effective solution is to increase organ donor rates; current, proposals



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Detection and Classification Epileptic Seizure

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Abstract: In this paper detection of epileptic seizure and non-seizure patient detected using the electroencephalogram (EEG) of human brain is obtained by recording of EEG signal it is related to the medical field specialty, diagnosis of brain related disease Proposed method based on wavelet coefficients types such as DWT, CWT, SWT (stationary wavelet transform) being translational invariant. In wavelet coefficient we use different properties. wavelet transform used for feature extraction and classifier used are support vector machine. Different artefact are removed using ICA. EEG advantageous neurological disease if the uses of more feature extraction accuracy is better and also error rate is low.

Keywords: Epilepsy, kurtosis, Standard deviation, Wavelet transform

I. INTRODUCTION

10% of humans suffers this type of Epilepsy to cure this epilepsy electroencephalogram (EEG) signals is used to record epileptic patient brain activity. Epilepsy is a brain neurological disease EEG is diagnostic test and monitoring method, EEG is better understanding than MRI and CT scan. International 10-20 system is used in which electrode placed on scalp in different positions. These electrode placed on scalp of brain.

At the time of EEG recording different artefact are formed or rises artefact such as ocular artefact, power line electrical noise that's why accuracy of the EEG signal reduces so such artefact are need to remove removal of artefact are using independent component analysis (ICA). ICA separates component in signal between the artefact and brain electrical wave, wavelet coefficient time and frequency domain. recognition or detection of seizure and non-seizure by SVM.

II. RELATED WORK

Cher Hau Seng, Ramazan Demirli, Lunal Khuon, Donovan Bolger research paper "Seizure Detection in EEG Signals Using Support Vector Machine" As a step toward practical simple Epileptic Seizure forecast Using Hybrid Feature Selection Over Multiple Intracranial EEG Electrode Contamination of this technology in patient, they present an individualized method for selecting features. The algorithm is instruct on a series of baseline and pre-seizure records and then validated on other. [1]

Ales Prochazka and Jaromir Kukal research "Wavelet Transform Use for Feature Extraction and EEG Signal Segmentation Classification" a description of a texture sample and find which element of a database best matches that sample. One way to find the association is by finding the member of the class with measurements that differ by the least amount from the test sample measurements. This is classification: to associate the appropriate class label (with the test sample by using the measurements) describe [2].


III. PROPOSED WORK

A. Methodology and Implementation

The proposed block diagram is shown in Fig.1 Input signal is pre-processed and feature extraction and classification is done to identify seizure or normal signal.

- 1) EEG DATASET: Two sets of data signal is normal and seizure these two set of data contain 10 signal of EEG one EEG dataset for healthy patient using 10-20 international standard in which electrode placed on scalp. Another EEG dataset for unhealthy that is seizure patient these database is available on internet. The CHB-MIT EEG database is available for download free of charge via <http://physionet.org/physiobank/database/chbmit/>. The EEG data was collected from 24 paediatric patients at Boston children's hospital. These signals were acquired from 21 surface electrodes placed to form channels by calculating difference between potentials measured at a couple of electrodes following the international 10-20 system. The channels' labels are Pre-frontal (Fp), Frontal (F), Temporal (T), Parietal (P), Occipital (O), and Central (C). The sampling rate of the EEG accession system was equal to 256 samples per second with a resolution of 16 bits. In the present study, the EEG signals of 24 subjects were used. 22 files among them 12 presenting seizures are available. The number of seizure segments is equal to 511 with duration equal to 511 sec [7]

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Diagnosis and Analysis of Epileptic Seizure Neurological Disorder Using Electroencephalography

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Abstract: Epileptic seizure is neurological disorder which can be diagnosed by using Electroencephalography, in this paper online database is used which is preprocessed and artifact removal of EEG signal is carried out. The primary features and secondary features such as mean, standard deviation, variance, skewness, kurtosis are found, which are given for a linear classifier which is Support Vector Machine for classification as seizure or non-seizure. Performance analysis of algorithm is also carried out by calculation of sensitivity, specificity and accuracy.

Keywords—Artifact, Electroencephalogram, Independent Component Analysis, Kurtosis, Seizure, Support Vector Machine.

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I. Introduction

Epileptic seizure is a neurological disorder, which is fourth common neurological disorder in the United States after migraine, stroke and Alzheimer disease affecting about approximately 2.2 million people worldwide [1]. An Electroencephalogram (EEG) is the medical test that detects electrical activity in brain using small electrodes, necessary system and international 10-20 electrode placing standards. Any variations in EEG patterns for certain state of the subject indicate abnormality. The brain cells communicate with each other via electrical impulses and are active. A proper identification of Epileptic seizure is necessary for appropriate treatment [2]. The EEG signals are subjected to internal and external noise, which are called as artifacts. External Artifacts are minimized by precautionary measurement during recording of EEG, internal artifacts are removed by implementation of notch filter for power noise and extracting required signal by implementation of band pass filter. The other type of artifacts such as ocular movements and ECG artifact is removed by Independent Component Analysis (ICA). In this paper the detection of seizure is done with the help of statistical first order and second order features and then classifying by using linear classifier.

II. Methodology

Detecting or identifying seizure in EEG signal with accuracy is very important appropriate treatment. Figure 1 shows block diagram of Automatic seizure detection system which consist of EEG signals from online database, which are preprocessed and required signal is extracted ,internal artifacts are removed, primary and secondary features are extracted which are further given to linear classifier to classify as seizure and non-seizure and then the performance of system is evaluated.



Figure1: Block Diagram of Automatic Seizure Detection System

2.1 EEG SIGNAL AND DATABASE

The EEG is the brain electrical activity measured by putting electrodes on the scalp. The joint activity of millions of cortical neurons, at the depth of several millimeters, produces an electrical field which is sufficiently strong to be measured from the human scalp [4]. Typically, the amplitude of an EEG signal is approximately from 40 to 100 mV with the frequency range from 0 to 100 Hz [5] on the cellular level

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A Literature Review on Various Types of Materials used for Full/U-Shaped Beam Jacketing Subjected to Pure Torsion

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Abstract: When an eccentric load/force is acted on a structural member other than bending plane which creates rotational moment in the body known as torsion. Concrete is most used worldwide material in construction industry and having weak in tensile strength. So it gets cracked when external load/force crosses equilibrium/compatibility conditions of the concrete body. Improvement in ductility effect, durability and strength etc. of existing structure or earth quake affected structures the most preferably repairing work can be done by using retrofitting method. Since from last three decades the retrofitting of required structures are done by using polymer fiber materials. The polymer fiber jacket are having types like FRP, GFRP, CFRP and aramid etc. Recently remarkable researches has been seen on utilization of ferrocement full, U-shaped jacketing with continue wrapping sheets or in strips. All above said jacketing can be apply in execution work with respect availability, suitability, amount of need and costing etc.

Keywords: Quassi brittle material, Polymer fiber jacket, ferrocement jacket.

I. INTRODUCTION

It is well known that there are four actions like axial, shear, bending and torsion are developed with respect to their nature of loading on the structure. Torsion is always considered as a secondary effect up to 1960's. After that we moved from working stress to limit state and shall go to ultimate one to reduce the factor of safety. Concrete is quassi brittle material weak in tensile strength it gets fractured even introduction of reinforcement in the body of the concrete. Polymer fiber is a composite material used for strengthening purpose of existing structural member to predominant torsion effect. The fibers are generally plastic fiber, glass fiber, carbon fiber, aramid etc. Also other fibers such as paper, wood or asbestos sheet have been used. However all above fiber sheets required a well adhesive like epoxy, vinyl ester etc. to achieve proper surface bonding. Although polymer fiber has near about more than one century history since from 1905 but such material is utilized for concrete as a mainstream technology effectively since from last three decades. Polymer fiber have very high tensile resistance property but relatively less young's modulus than concrete and poor stability in compression so it is utilized as a composite material with concrete. Such material are named as a FRP, GFRP, CFRP, aramid etc. with respect the material used for application. Recently there is also utilization of Ferrocement all sides, U-shaped jacketing with continued wrapping sheets or in strips. All above said polymer fibers can be used in our engineering application with respect to availability, requirement, costing, suitability etc.

II. LITERATURE REVIEW

A. Polymer fiber jacketing like FRP, CFRP, GFRP, ARAMID fiber etc.

Constantin E. Chalioris¹ (2007) has predicted an analytical approach to observe the torsional response of reinforced concrete beams strengthened with fiber reinforced polymer material. To form the theoretical equations he casted twelve tests specimen and took additional database of experimental information for twenty four specimens compiled from other researchers. He introduced that the analysis method employs the combination of two different theoretical models i.e a smeared crack model up to pre cracking stage and soften truss model for post cracking response. Such proposed methodology is achieved through extensive comparisons between analytically predicted behaviour curves and experimentally obtained results. This study allows the realistic modeling of the elastic and the post cracking response of FRP strengthened RC beams under torsion.

Constantin E. Chalioris² (2008) investigated the full torsional behavior of RC beams strengthened with FRP materials and made theoretical analysis of that. The present experimentation deals with the observation of the torsional strengthening of concrete beams without stirrups using epoxy-bonded carbon fibre-reinforced-polymer (FRP) sheets and strips as external transverse reinforcement.



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Comparative Study of LBP, LLBP and DCLBP Methods for Palm Vein Recognition

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Abstract: Human identification is done with palm vein recognition biometric system and it provides more security. This technology is highly used in recent years because difficult to forge, everyone having unique vein pattern. And vein pattern cannot change every time so it provides stable and unique results. In this paper Local Binary Pattern (LBP), Local Line Binary Pattern (LLBP) and Diagonal Cross Local Binary Pattern (DCLBP) feature extraction methods are used to extract the features from palm vein images. Region of Interest (ROI) detection by using Competitive Hand Valley Detection (CHVD) algorithm and Probabilistic Neural Network (PNN) classifier is used for matching. All methods are compared by using calculated recognition accuracy and recognition time. Accuracy of 100% is obtained by LBP, DCLBP methods and 95% obtained by LLBP method. And recognition time required for DCLBP is very high and LBP required less time than LLBP and DCLBP methods.

Keywords: Palm vein, Local Line Binary Pattern (LLBP), Diagonal Cross Local Binary Pattern (DCLBP), Probability Neural Network (PNN).

I. INTRODUCTION

Biometric system verifies the person by using physical human features. There are many biometric recognition systems are present such as face, iris, palm print, fingerprint etc but these systems have some problems. In face recognition system accuracy depends on facial expression and illuminations changing factors. In iris recognition system the accuracy is reliable but required device cost is higher than other biometric systems. Palm print and fingerprint recognition systems are contact base methods, in which input sensor contact with user palm and finger surface. In case steal latent of palm and finger prints remain on sensor surface and it affects accuracy as well as hand surface problems like dryness, sweating and skin distortion decrease the accuracy of the system [1]. To overcome these drawbacks palm vein recognition system is developed.

In recent years texture based approach such as Local Binary Pattern (LBP) is widely used for palm vein recognition. Every palm vein image is not clear so that segmentation problem is occurred during the feature extraction process. The recognition accuracy is decreased because of unclear veins and inappropriate segmentation. In this paper Local Line Binary Pattern (LLBP) is proposed for palm vein recognition [2].

The most important element in recognition system is feature extraction. The recognition performance is enhanced by improving the feature extraction methods. Dini Frontasari [3] discussed different methods used for vein pattern verification. These methods include, hand front-side (palm vein image), hand backside (dorsal) and finger veins. Another new feature extraction method which is modified Local Binary Pattern (LBP) is used for palm vein recognition system. In this process image feature should take diagonal pixel variations. This modification method is known as Diagonal Cross Local Binary Pattern (DCLBP) [3].

In this paper three feature extraction methods which are 1) Local Binary Pattern, 2) Local Line Binary Pattern (LLBP), 3) Diagonal Cross Local Binary Pattern (DCLBP) are used for palm vein recognition. These methods are compared with respect to time required for each feature extraction method and accuracy is obtained by both methods.

The remaining work of this paper is as follows: proposed system described in section 2 which is included Image Acquisition, Preprocessing, Feature Extraction and Matching system is given in detail. In section 3 Simulation and Results of the proposed system is given. And conclusion is described in section 3.



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Recent Advances in Palm Vein Recognition using Minutiae-Based and Texture-based Feature Extraction Methods

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Abstract: Biometric system is highly used for security purpose in many recent applications. Texture based, Line based, Appearance based, Code based methods are used for feature extraction. Mainly, two methods are used for palm vein feature extraction which are minutiae-based and texture descriptor-based. Many researchers are attracted by Texture based approaches during the last years compared to minutiae based approach which segment veins first and then extract the information of singular point. This facilitated use of texture features in palm vein detection. The study presented in this paper is an extensive survey of the Minutiae-based and Texture-based feature extraction for palm vein recognition.

Keywords: Palm vein, feature extraction, Minutiae-based, Texture-based

I. INTRODUCTION

Security is the most vital aspect in various applications like, ATM transactions, border crossing control and door access control etc. Many authentication parameters are used for security systems which are password, keys, card etc. Every individual has specific biometric features which facilitate the use of biometric parameters for security. Hence biometric systems are preferred than other security systems. The later have different problems like forgotten password, lost keys and cards duplication. But in biometric system the person himself/herself is required for authentication process. Hence biometric systems are free from the problems like duplication, forgotten, lost etc [1]. Biometric systems are divided into two main types i.e. Physiological and Behavioral system. Physiological system consists of fingerprint/vein, palmprint/vein, facial, iris, hand geometry and Behavioral system consists of voice, signature and keystrokes. The Physiological system proved most useful in many applications. The security systems based on face recognition technique has various features based on illuminations and facial expressions but performance of face recognition is highly dependent on illumination conditions and facial expressions. The security systems based on Iris recognition techniques have a better accuracy but devices used for capturing patterns are more expensive as compared to other biometric systems [2]. Hence to get ride of the above limitations, vein pattern recognition system is widely preferred. In a Physiological Biometric system, vein pattern have more accuracy than other bio- parameters such as fingerprint, palmprint, face and iris. In fingerprint and palmprint technique, user's finger and palm surface are laid on the surface of input sensor. This captures significant finger and palm prints and then these are provided to relevant systems which extract features from prints and uses for further security reasons. This system may have limitation of less accuracy in situations where finger and palm surface are with sweat, dryness, dirt, oiliness etc because skin distortion can degrade recognition accuracy. Finger have small surface area as compared to the palm surface hence palm vein pattern gives better result than finger vein pattern. The security system based on palm vein pattern needs Preprocessing, Feature extraction and Feature matching as major processing steps as shown in figure 1.

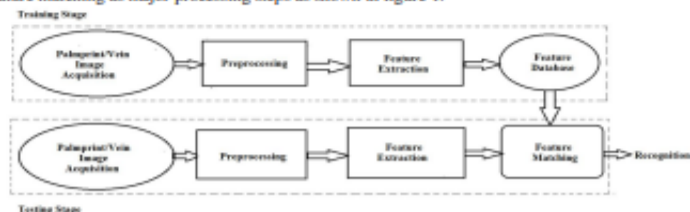


Fig.1 Block Diagram of Palmprint/Vein Recognition



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Study and Analysis of Bitumen Mixture Incorporating with Waste Foundry Sand

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Abstract: In 20th century India is aiming to be developed country. The backbone of any developed country is its Infrastructure facility. Now day in India lot of infrastructure projects are going on, in that the road transportation facility is a very important criteria. In recent years there is spontaneous increase in demand of good quality pavements in Urban as well as in rural areas. The construction of good quality roads is mainly depend upon the funding available for construction and quality of raw material available for construction of road, so it very important to construct good quality roads in low budget.

Due to scarcity natural resources, the cost of raw material is increasing day by day, so it is important to find out alternative material for construction of roads. Now a day's various Industrial wastes are utilized for road construction. In Kolhapur city there are lot of foundry industries, which generated lot foundry sand waste. Generally this waste is dumped in open areas. This foundry sand can be utilized for various construction purposes. Famously this is utilized in concrete.

In this study the emphasis is given to use of foundry sand waste in flexible pavement construction. The focus of this study is to analyse the impact of foundry sand on properties of bitumen. In this study we have carried out standard testing of bitumen with percentage replacement of foundry sand to compare the properties of normal bitumen and foundry sand mix bitumen. 2%, 3% & 4 % foundry sand replacement is done and tests are carried out as per standard procedure. After conduction of tests it has been found that the properties of bitumen are changed and those are not as per IS requirements. Only the value of flash point and fire is within the range specified by IS codes.

Keywords: Foundry sand, Bitumen, waste utilization, Highway Engineering, Flexible pavements, Bitumen testing.

I. INTRODUCTION

Infrastructure development is the burning issue now days in India. To meet the requirements in the construction of pavements and other structures bitumen plays the important role and a large quantity of bitumen is being utilized in every construction practices. In civil engineering, due to urbanization the demand for construction materials increases, with the increase in demand there is a strong need to utilize alternative materials for sustainable development.

The problem industry facing today is waste disposal. Reuse of waste in construction or as a construction material may be cheapest and best solution. Foundry sand is abundantly available waste materials which can be used as construction material. Dumping of foundry sand can form the leachate due to its chemical properties. So reuse of foundry sand can be proved economical and environment friendly.

The increase in the popularity of using environmentally friendly, low-cost and lightweight construction materials in construction industry has brought about the need to investigate how this can be achieved by benefiting to the environment as well as maintaining the material requirements affirmed in the standards. By partial replacements of foundry sand in bitumen can reduce the environment degradation and can be a cost effective solution.

To study the properties of bitumen after replacement of foundry sand lab tests are carried out. Penetration test, softening point test, ductility value & Fire and flash point tests are carried out. First upon all tests are carried out on normal bitumen without any replacement of foundry sand & after that tests are carried out on 2%, 3% & 4% foundry sand replacement. All the tests are carried out as per IS code standards.

II. AIM AND OBJECTIVE

Following are the objective of study

- A. To study the properties of bitumen incorporating with the foundry sand
- B. To compare the properties of normal bitumen & Foundry sand mixed bitumen
- C. To find out optimum foundry sand mix proportion for bitumen.



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A Review on Conceptual Model of in Basin Plant to Increase Self –Purification of River

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Abstract: This paper aims to study of conceptual model of in basin plant that will helps to increase self purification rate of river. Now a days purification of river have become problem so the study on this is become important.

The self-purification of natural water systems is a complex process that often involves physical, chemical, and biological processes working simultaneously. ⁽¹⁾Running water is capable of purifying itself with a distance through a process known as self-purification. This is the ability of the river to purify itself of sewage or other waste naturally. The process of self-purification mainly depends on absorption and dissolution of atmospheric oxygen from a water body surface. This self-purification cannot be depended upon to bring about complete purification, but it may well improve the water quality sufficiently. When disposal of sewage in the stream, the stream water is examined towards down streams, it will be observed that the quality of stream water successively changes. Near the place of disposal, the water will be polluted and it becomes purified after some travel towards the downstream side due to natural forces of purification.

Keywords: River Self Purification, Water Treatment, BOD, COD.

I. INTRODUCTION

River restoration is the process of managing rivers by various operations to reinstate natural processes to restore biodiversity, providing benefits to both people and wildlife. Reintroducing natural processes can reshape rivers to provide the diversity of habitats required for a healthy river ecosystem and ensure their long-term recovery by addressing the root cause of the issue. River degradation has led to an extensive loss of habitats and additional pressures on the aquatic and terrestrial species that use them. It also affects the quality of our drinking water, resilience to climate change and ability to store and hold back flood water. Damage to river systems has been so extensive that an urgent need has emerged, not only to conserve, but to restore these systems. In recent years, severe problem in front of whole nation is water pollution. We have seen that various national authorities are works for pollution control. Still the level of pollution day by day goes higher. Highest number of polluted rivers Maharashtra state has 49 polluted river stretches, highest in the country, which including Mithi, Ulhas, Vaitarna, Godavari, Bhima, Krishna, Tapi, Kundalika, Panchganga, Mula-Mutha, Pelhar and Penganga. 3,000 MLD of untreated sewage and industrial effluents are discharged into the state's water bodies daily. This causes serious impact on human health as well as environmental.[1] So it is necessary to conserve rivers by various human efforts and engineering techniques. Hence we are going to work for the restoration of river by implementing modern river restoration techniques on the basis of principles of self purification of streams.

A. Factors Affecting self- Purification

- 1) *Dilution:* When sufficient dilution water is available in the receiving water body, where the wastewater is discharged, the DO level in the receiving stream may not reach to zero or critical DO due to the availability of sufficient DO initially in the river water before receiving the discharge of wastewater.
- 2) *Current:* When strong water current is available, the discharged wastewater will be thoroughly mixed with stream water preventing deposition of solids. In the small current, the solid matter from the wastewater will get deposited at the bed following decomposition and reduction in DO.
- 3) *Temperature:* The quantity of DO available in stream water is more in cold temperature than in hot temperature. Also, as the activity of microorganisms is more at a higher temperature, hence, the self-purification will take less time at hot temperature than in winter.
- 4) *Sunlight:* Algae produces oxygen in the presence of sunlight due to photosynthesis. Therefore, sunlight helps in purification of the stream by adding oxygen through photosynthesis.



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A Literature Review on Various Types of Materials used for Full/U-Shaped Beam Jacketing Subjected to Pure Torsion

Mane V V¹, Tiwari V S², Soundattikar N M³, Jadhav A M⁴, Mane D B⁵

^{1,2,3,4,5}Department of Civil Engineering, BVCOEK

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Keywords: Quasi brittle material, Polymer fiber jacket, ferrocement jacket.

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II. LITERATURE REVIEW

A. Polymer fiber jacketing like FRP, CFRP, GFRP, ARAMID fiber etc.

Constantin E. Chalioris¹ (2007) has predicted an analytical approach to observe the torsional response of reinforced concrete beams strengthened with fiber reinforced polymer material. To form the theoretical equations he casted twelve tests specimen and took additional database of experimental information for twenty four specimens compiled from other researchers. He introduced that the analysis method employs the combination of two different theoretical models i.e a smeared crack model up to pre cracking stage and softening truss model for post cracking response. Such proposed methodology is achieved through extensive comparisons between analytically predicted behaviour curves and experimentally obtained results. This study allows the realistic modeling of the elastic and the post cracking response of FRP strengthened RC beams under torsion.

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EFFECT OF ZONE FACTOR ON SEISMIC PARAMETERS OF RC BUILDING

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ABSTRACT: Considerable development in earthquake resistant design has been taken place in recent past. As a result Indian seismic code IS: 1893 has also been revised in year 2016. This paper presents the seismic load estimation for multistory RC buildings as per IS: 1893-2002 and IS: 1893-2016 recommendations. In present study G+12 and G+16 RC Ordinary Moments Resisting Framed buildings (OMRF) were analyzed. The study of effect of zone factor on seismic parameters is performed by seismic coefficient method laid by these two versions. The results were compared in terms of base share, storey drift, time period, storey shear and storey displacement and conclusion were drawn. It is concluded that such study needs to be carried out for individual structure to predict seismic vulnerability of RC framed buildings that were designed using earlier code and due to revisions in the code provisions may have observed vulnerable to earthquake

Keywords: Earthquake, seismic zone, vulnerability, seismic parameters, seismic load.

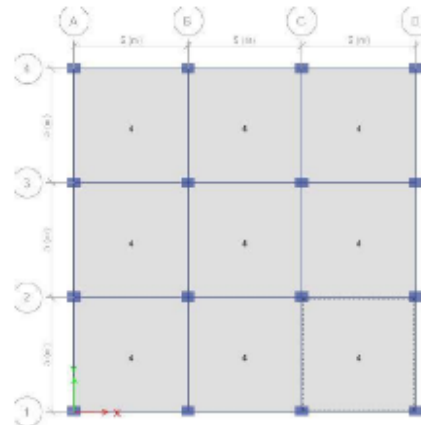
I. INTRODUCTION

There has been an increased awakening among experts, owners, designers, engineers and the society at large about the significance of earthquake protection of structures. At the same time, there has also been persistent research & trainings in the field of seismic engineering, demanding updating of codes and standards from time to time. IS 1893 (Part 1) and IS 13920 has been recently revised, bringing into state of practice, the progress made in research. There is an often-repeated saying, "Earthquakes don't kill people, buildings do." One can't control the seismic hazard in the community where one lives or work, but can certainly influence the most important factor in saving lives and reducing losses from an earthquake by the adoption and enforcement of up-to-date building codes. In present study G+12 and G+16 RC ordinary

moments resisting framed buildings were analyzed. The study of effect of zone factor on seismic parameters is performed by using seismic coefficient method laid by IS 1893:2002 and IS 1893:2016. The results were compared in terms of base share, storey drift, time period, storey shear and storey displacement and conclusion were drawn.

II. DESCRIPTION OF BUILDINGS

The structures representing medium and high rise reinforced concrete framed buildings are considered in this Study. Utility of building is residential building, RC OMRF buildings G+12 and G+16 are considered. All buildings have similar plan dimension 15m X 15m as shown in figure 1. Building is resting on medium soil. Floor to floor height is 3 m, the thickness of slab is 150 mm and size of all columns is 450 mm X 600 mm whereas size of all beams is 230mm X 600 mm. The Imposed load on floor is 3kN/m² and imposed load on roof is 1.5 kN/m². Floor finishes is 1 kN/m² and roof treatment load is 1.5 kN/m². The infill walls are 230 mm thick all around. Damping factor was 5%. The grade of concrete and steel is M20 and Fe415 respectively. Buildings are first designed for gravity loads only as per IS 456:2002.





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Palm Vein Recognition Based on Local Binary Pattern and Uniform Local Binary Pattern

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Abstract — Palm vein recognition biometric system is highly accurate and more secure than other person verification systems like key, password and id card etc. because the internal nature of veins pattern. In this proposed work Local Binary Pattern (LBP) and Uniform Local Binary Pattern (LBP) texture feature methods has been analyzed for palm vein recognition. Probabilistic Neural Network (PNN) classifier has been used for matching process. The CASIA Multi-Spectral Palmprint Image Database V1.0 has been used. The Accuracy and recognition time required for LBP and LBP are used to analyze the performance of proposed system. It is found that LBP provides 100% recognition accuracy but takes more recognition time compared to LBP. LBP provides 90% accuracy in recognition.

Keywords — Palm vein, Local Binary Pattern (LBP), Uniform Local Binary Pattern (LBP), Probability Neural Network (PNN).

I. INTRODUCTION

Biometric systems are used for personal verification and it provides higher level security. Many biometric systems are used which are fingerprint, iris, face and vein pattern recognition. Palm vein recognition system gives better performance than others because, every person has unique vein pattern therefore verification of person is done with high accuracy. And this system avoid problems like duplication, fraud etc. Texture-Based and Minutiae-Based feature extraction methods are used for palm vein recognition. Texture-Based method was increased attention during last year [1].

There are two methods are used for palm vein recognition such as, contact-based and contact-less methods. The main disadvantage of contact-based method is, palm surface is in contact with input sensor so that, latent hand prints which remain on the surface of input sensor and accuracy level decreases. Therefore contact-less method is more effective for palm vein recognition [2]. Contact-less images are captured with Near Infrared (NIR) light spectrum. The NIR illumination system reduces some typical steps in image processing and avoids problems like backgrounds changing and light variations [1].

Alicia Aglio-caballero et al [1] Local Binary Pattern (LBP) and Uniform Local Binary Pattern (LBP) analysis for palm vein recognition with distance based matching process. Leila Mirmohamadsadeghi et al [3] Local Binary Pattern (LBP) and Local Derivative Patterns (LDP) feature extraction methods studied for palm vein recognition. Wenxiong Kang et al [4] Local Binary Pattern (LBP) performed with two methods such as, gradient-based maximal principal curvature algorithm and k-means method for improve accuracy and suppress noise in palm vein recognition. Jayanti Yushmani et al [5] proposed Local Line Binary Pattern (LLBP) feature extraction method for palm vein recognition. The unclear vein images problem solved by this proposed system. In 2017 Dini Fronitasari et al [6] developed modified Local Binary Pattern (LBP) feature extraction method i.e Diagonal-cross Local Binary Pattern (DCLBP). The palm vein recognition accuracy is improved by this modified DCLBP method with Probabilistic Neural Network (PNN) classification technique.

This work includes two texture descriptors which are; 1) Local Binary Pattern (LBP) and 2) Uniform Local Binary Pattern. Proposed system is applied on CASIA Multi-spectral palmprint Image Database V1.0. The aim of this proposed



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Indexing

Effect of Turning Process Parameter on Surface Roughness using Inconel as a Material

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Abstract: Inconel 718 is nickel-based superalloy extensively used in aerospace industries, marine industries, steam turbine power plant, and nuclear reactor. Present work focuses on optimization of turning process parameters of Inconel 718 using Taguchi optimization technique. Surface roughness was the response variable investigated. Experimental results indicate that proposed mathematical model suggested adequately describe performance indicator within the limits of factors that are being investigated. Tool is the most influencing factor on surface roughness followed by depth of cut, speed and feed.

Keywords: Inconel 718, surface roughness, Anova, S/N ratio

1. Introduction

The recent developments in science and technology have put tremendous pressure on manufacturing industries. The manufacturing industries are trying for increasing the quality of the machined parts, decreasing the cutting costs and machine more hard materials. High efficiency of machine is obtained by reducing the machine time with high speed of machining. When cutting of hard materials such as Steels, Inconel, Titanium and super alloys, softening temperature and chemical stability of tool material limits the cutting speed [1.1]

The machining operations such as turning, drilling, milling, etc. are carried out on different machines but now a day's CNC machines are most commonly used. While machining, different parameters such as spindle speed, feed rate, depth of cut and type of tool must be considered to get good surface finish and less tool wear with good efficiency of machining. Thus it is necessary to compare surface roughness and tool wear by using different tools [1].

Inconel 718 material is the most difficult material to machine. Improper selection of machining parameters causes cutting tools to wear and break quickly as well as economical losses such as damaged workpiece and rejected surface quality. Machining parameters and tool geometry are the important parameters which affect the machinability properties Nalbant et al (2007) [2]. A machinability model may be defined as a functional relationship between the input parameters (cutting speed, feed, and depth of cut) and the output responses (tool life, surface roughness, cutting force, power and material removal rate) of machining process Choudhury and El-Baradie (1999).

Coated and uncoated carbide inserts are widely used in metal working industry for machining of different material. These two inserts have their own advantages and disadvantages. This experimentation will help to investigate the best cutting insert is whether coated or uncoated carbide insert for the machining of Inconel 718 in CNC turning considering two variables as surface roughness, tool wear and material removal rate. In this investigation the machining parameters used are spindle speed, feed rate and depth of cut [3].

2. Methodology

In current experimentation five process parameters are selected as control factors. The remaining process parameters kept as constant. Controlled and constant parameters are given in table 1 and table 2.

Table 1: Controlled parameters

Sr. No	Controlled parameters
1.	Speed(RPM)
2.	Feed(mm/min)
3.	Tool nose radius (mm)
4.	Depth of cut (mm)

Table 2: Constant parameters

Sr. No	Constant parameters	
1.	Cutting fluid	W4 CBF
2.	Work material	Inconel 718
3.	Work-piece dimension	25 mm x 65mm
4.	Tool holder	SPMG060204DG

For present experimentation, we use L18 design of experiment. There are four process parameters, three process parameter have three levels and one process parameter have two level there parametric combination as shown in Table 3.

Table 3: Parametric combinations

Sr.No	Tool	Speed	Feed	Depth of cut
1	T1	S1	F1	D1
2	T1	S1	F2	D2
3	T1	S1	F3	D3
4	T1	S2	F1	D1
5	T1	S2	F2	D2
6	T1	S2	F3	D3
7	T1	S3	F1	D2
8	T1	S3	F2	D3
9	T1	S3	F3	D1
10	T2	S1	F1	D3
11	T2	S1	F2	D1
12	T2	S1	F3	D2
13	T2	S2	F1	D2
14	T2	S2	F2	D3
15	T2	S2	F3	D1
16	T2	S3	F1	D3

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Dynamic Analysis of Bumper Beam

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Abstract - Now a days automobile accidents are increasing each year. The main reason is being the lack of proper safety system in the vehicle. In case of automobiles we can see that the 60% of accidents caused due to frontal impact of the automobile and the bumper beam is generally used to protect the automobile components from the impact. The bumper playing key roll in automobile as well as human safety purpose. An automotive bumper beam is structural component with intended absorb kinetic energy during vehicle collision. this paper throws light on materials, structure and safety impact condition included for analysis of bumper beam in order to improve crashworthiness during collision.

Key Words: (bumper, analysis, deformation, stress)

1. Introduction

Presently days Car crashes expanding every year the greater part of risk circumstances are jumped out at driver that they can not be keep away from. As indicated by overview that 60% mishaps are happened front of vehicle and this effects are most usually observed, unintentional circumstances on street. This gives most elevated bit of death. The main reason of this being lack of proper safety system in vehicle. In automobile vehicle bumper beam is a primary component which plays a very important role. Which takes entire damage and transfer all forces to structure. As well as bumper beam is used to absorb accidental kinetic energy by deflection low speed impact and by deformation in high speed impact. Stiffness and energy absorption are essential criteria in design of bumper beam. The new bumper design must be very flexible to reduce passenger and occupant injury and stay in impact in low speed impact. The reinforcement beam play very important role in safety it must be validate to finite element analysis. Aim of this study improving the crashworthiness and energy absorbing capacity of bumper beam and selecting the best suitable material which gives the best result under the deformation. figure shows of basic component of bumper, bumper system is made up of four main parts a bumper fascia, energy absorber, reinforcing beam, bumper stay. Bumper fascia is outside covering of bumper as shown in figure. Energy absorber is usually made up of foam material that is design to absorb impact energy. This study is done on CATIA and Ansys software.

Basic components of Bumper:

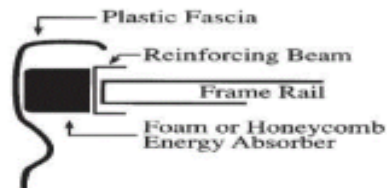


Fig. Basic components of Bumper

1.1 Literature Review

1."Crashworthiness Analysis of a Composite and Thermoplastic Foam Structure For Automotive Bumper Subsystem"

Giovanni Belingardi, Ermias Gebrekidan Koricho, Alem Tekalign Beyene, Brunetto Martorana, Mangino Enrico

In the study, the re-design of a front bumper subsystem has been developed finalised to Light weight. Alternative solutions have been considered by substituting the used steel with other suitable materials. The bumper beam solutions, based on these alternative materials, have been developed on the bases of equal thickness and equal stiffness criteria. Comparison of the obtained FE simulation results illustrates how the choice of material can significantly affects the performance of bumper subsystem. The introductions of local reinforcements at the stress concentration point enhance the composite bumper beam performance by redistributing the stress and preventing local failures. However the PA66 solution, even if reinforced with short glass fibres, does not reach comparable result with respect to the CFRP solution. Looking at the results from another point of view, the polyamide with 30% glass solution leads to better results in term of possible material recycling at the end of life, while CFRP has still problematic perspective.

2."Improving The Crashworthiness Of An Automobile Bumper"

Arun Basil Jacob¹, Arunkumar O.N

This paper compares newly designed bumper with existing steel bumper of a Toyota Camry automobile. The crash tests were executed in a software environment. All the simulations were executed using LS-DYNA. The material



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A Study of Physico-Chemical Characteristics of Jayanti Nalla Water along with it's Tributaries with Special Emphasis on Quality of Panchganga River

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Abstract: India has been undergoing industrial revolution in a big way during the last three decades. With the recent liberalization of industrial policy, it has got a further boost. Economic conditions of the common man will improve, prosperity will prevail. This is all provability 'one side of the coin' the other side of coin is not very bright. The industries spend solid, liquid and gaseous substances in to the environment. Unless such substances are effectively managed, our environment may get damaged irreparably. The scientific and technological advancements and mismanagement of natural resources have given rise to numerous environmental problems such as pollution of water, soil, air radiation and noise, with consequent adverse effects flora, fauna, human health and well-being the environment is under more sustained threat from human activity in the 21st century than at any other time in the history with extensive potential social and health consequences.

The increasing rate of human population and rapid pace of industrialization has created many problems of pollution in the rivers and streams. The domestic wastes and industrial effluents are being indiscriminately discharged in the nearby rivers, reservoirs, lakes and tanks. In Kolhapur city similar situation is observed in Panchganga river where four major nallas viz. Jayanti nalla, line bazaar nalla, dudhali nalla and bapat camp nalla, directly release effluents into the river. As the pollutants are discharged in the river through these nallas, the intensity of river pollution is increasing highly. Tremendous increase in population, industrialization, agriculture run off is adding to the pollution of available water resources. So it is worthwhile to assess the quality of the jayanti nalla water and the small streams connecting to it, to study its possible environmental impacts.

Keywords: Jayanti nalla, Panchganga river, industrial effluents, environmental impacts, pollutants

I. INTRODUCTION

In this document A case study is done of Jayanti nalla out of above mentioned four major nallas that carries almost 70 to 75 percent of total effluent generated in Kolhapur. The marked effects are change in physical, chemical and biological properties of streams. The rising contamination sources in urban systems results in chemical pressures often manifested as elevated pollution load, which in turn have damaging impacts on human health.

The study of River water pollution, an environmental crisis a case study of Panchaganga river of Kolhapur city has been done by D. H. Pawar et.al. The conclusions drawn out were that a considerable BOD and COD, low PH, high organic matter, highest dissolved solids indicate water polluted generally by effluents from agro-based industry, leather tanneries, domestic sewage etc. [1]

A Study on the Physico-Chemical Characteristics of Panchaganga River in Kolhapur City, MS, INDIA by Thorvat A.R., et.al is done. In this paper it is found that the physico-chemical and biological parameter features of this river fluctuate from place to place due to discharge of agricultural, municipal as well as industrial wastes into it. Temperature values are ranging from 29°C to 39°C. It is observed that the water, temperature is within the desirable limit. The pH values vary from 5.3 to 8.3 [2]

A study on Water Pollution and Public Health Issues in Kolhapur City in Maharashtra is done by Mr. Swapnil Kamble. In this paper, an attempt has been made to understand the problem of water pollution of Panchaganga river due to urbanization and industrialization and its impact on public health in Kolhapur city and measures to be taken to deal with this problem effectively. [3]

A research study on Water Quality Analysis And Simulation Of Panchaganga River Using Matlab is done by Mr. Riyaj K. Mulla et.al. The outcome briefly describes how MATLAB programming tool can be used for prediction of water quality in river. Also how MATLAB helps to predict future water quality with present data and save time, manpower and other cost for continuous analysis. [4]



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Structural Analysis of Steel Transmission Tower for different Risk Coefficients-A Case Study

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Abstract: The present study deals with the analysis of the steel transmission tower for different risk coefficients located in Pune and Delhi. The analysis of the steel transmission towers has been done by using SAP2000 Integrated Solution for Structural Analysis and Design Software version 20.

A study has been done of both the models subjected to wind and seismic forces as per IS codes and the results so obtained were compared for DIFFERENT RISK COEFFICIENTS with the same configuration. A comparative analysis has been carried out for various parameters like axial force, bending moment, base reaction, torsion, shear force etc. and critical load conditions for both the Pune and DELHI location.

Keywords: SAP2000, risk coefficient, steel transmission tower, wind force, seismic forces

I. INTRODUCTION

This document A case study is done to check whether the same structure along with its same configurations can be safe when they are located at different locations and subjected to wind and seismic forces as per IS codes with different risk coefficient or probability factor (k_1). Analysis is been carried out as per the IS 800:2007(LSM) and IS 1893:2002 codes. The load calculations are done manually but the results obtained are from SAP2000 analysis software v.20.

The study of Analysis and Design of Three and Four Legged 400KV Steel Transmission Line Towers: Comparative Study has been done by Y.M.Ghugal et.al.

The conclusions drawn out were that axial forces and moments are increased in 3 leg transmission tower as compared to 4 leg transmission tower on the converse there is less steel consumption and area required for 3 leg transmission towers as compared to 4 leg transmission tower. [1]

A study on Structural Analysis and Design of Steel Transmission Tower in Wind Zones II and IV using

STAAD.ProV8i by S.Panwar et.al is done. In this paper it is found that the axial forces and bending moments have changed for the two different locations. [2]

A study on Static and Dynamic Analysis of Transmission Line Towers under Seismic Loads is done by S.Karthik C S et.al. The paper introduces different types of transmission tower and its configuration as per Indian Standard IS-802. A typical type of transmission line tower carrying 220kV single circuit conductors is modelled and analysed using SAP2000 considering forces like wind load, dead load of the structure, breaking load of the conductors and earthquake load as per Indian Standard IS1893: 2000 (part I). The conclusion drawn out from this paper is that Study of different load cases on structure is very important to recognize the case that will cause larger deflection in tower model and to say which case will be optimized and Tower structure with least weight is directly proportional in reduction of the cost. [3]

A research study on Seismic Response of Power Transmission Tower-Line System Subjected to Spatially Varying Ground Motions is done by Li Tian, Hongnan Li, and Guohuan Liu. The outcomes prove that the uniform ground motion at all supports of system does not provide the most critical case for the response calculations. [4]

A study about the design of four-legged steel lattice tower for categorization of gravity and lateral loads under various load combinations for Shimla using IS 800:1984 by Bhardwaj H.L. et.al. [5].

A comparative analysis carried out for different heights of towers using different types of bracing system for wind zones I to V and earthquake zones II to V of India by gust factor method is used for wind load analysis, model analysis and response spectrum analysis, used for earthquake loading by Sharma Kr. K. et.al. [6].



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Study and Analysis of Bitumen Mixture Incorporating with Waste Foundry Sand

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Abstract: In 20th century India is aiming to be developed country. The backbone of any developed country is its Infrastructure facility. Now day in India lot of infrastructure projects are going on, in that the road transportation facility is a very important criteria. In recent years there is spontaneous increase in demand of good quality pavements in Urban as well as in rural areas. The construction of good quality roads is mainly depend upon the funding available for construction and quality of raw material available for construction of road, so it very important to construct good quality roads in low budget.

Due to scarcity natural resources, the cost of raw material is increasing day by day, so it is important to find out alternative material for construction of roads. Now a day's various Industrial wastes are utilized for road construction. In Kolhapur city there are lot of foundry industries, which generated lot foundry sand waste. Generally this waste is dumped in open areas. This foundry sand can be utilized for various construction purposes. Famously this is utilized in concrete.

In this study the emphasis is given to use of foundry sand waste in flexible pavement construction. The focus of this study is to analyse the impact of foundry sand on properties of bitumen. In this study we have carried out standard testing of bitumen with percentage replacement of foundry sand to compare the properties of normal bitumen and foundry sand mix bitumen. 2%, 3% & 4 % foundry sand replacement is done and tests are carried out as per standard procedure. After conduction of tests it has been found that the properties of bitumen are changed and those are not as per IS requirements. Only the value of flash point and fire is within the range specified by IS codes.

Keywords: Foundry sand, Bitumen, waste utilization, Highway Engineering, Flexible pavements, Bitumen testing.

I. INTRODUCTION

Infrastructure development is the burning issue now days in India. To meet the requirements in the construction of pavements and other structures bitumen plays the important role and a large quantity of bitumen is being utilized in every construction practices. In civil engineering, due to urbanization the demand for construction materials increases, with the increase in demand there is a strong need to utilize alternative materials for sustainable development.

The problem industry facing today is waste disposal. Reuse of waste in construction or as a construction material may be cheapest and best solution. Foundry sand is abundantly available waste materials which can be used as construction material. Dumping of foundry sand can form the leachate due to its chemical properties. So reuse of foundry sand can be proved economical and environment friendly.

The increase in the popularity of using environmentally friendly, low-cost and lightweight construction materials in construction industry has brought about the need to investigate how this can be achieved by benefiting to the environment as well as maintaining the material requirements affirmed in the standards. By partial replacements of foundry sand in bitumen can reduce the environment degradation and can be a cost effective solution.

To study the properties of bitumen after replacement of foundry sand lab tests are carried out. Penetration test, softening point test, ductility value & Fire and flash point tests are carried out. First upon all tests are carried out on normal bitumen without any replacement of foundry sand & after that tests are carried out on 2%, 3% & 4% foundry sand replacement. All the tests are carried out as per IS code standards.

II. AIM AND OBJECTIVE

Following are the objective of study

- A. To study the properties of bitumen incorporating with the foundry sand
- B. To compare the properties of normal bitumen & Foundry sand mixed bitumen
- C. To find out optimum foundry sand mix proportion for bitumen.



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A Review on Conceptual Model of in Basin Plant to Increase Self –Purification of River

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Abstract: This paper aims to study of conceptual model of in basin plant that will helps to increase self purification rate of river. Now a days purification of river have become problem so the study on this is become important.

The self-purification of natural water systems is a complex process that often involves physical, chemical, and biological processes working simultaneously. ⁽¹⁾ Running water is capable of purifying itself with a distance through a process known as self-purification. This is the ability of the river to purify itself of sewage or other waste naturally. The process of self-purification mainly depends on absorption and dissolution of atmospheric oxygen from a water body surface. This self-purification cannot be depended upon to bring about complete purification, but it may well improve the water quality sufficiently. When disposal of sewage in the stream, the stream water is examined towards down streams, it will be observed that the quality of stream water successively changes. Near the place of disposal, the water will be polluted and it becomes purified after some travel towards the downstream side due to natural forces of purification.

Keywords: River Self Purification, Water Treatment, BOD, COD.

I. INTRODUCTION

River restoration is the process of managing rivers by various operations to reinstate natural processes to restore biodiversity, providing benefits to both people and wildlife. Reintroducing natural processes can reshape rivers to provide the diversity of habitats required for a healthy river ecosystem and ensure their long-term recovery by addressing the root cause of the issue. River degradation has led to an extensive loss of habitats and additional pressures on the aquatic and terrestrial species that use them. It also affects the quality of our drinking water, resilience to climate change and ability to store and hold back flood water. Damage to river systems has been so extensive that an urgent need has emerged, not only to conserve, but to restore these systems. In recent years, severe problem in front of whole nation is water pollution. We have seen that various national authorities are works for pollution control. Still the level of pollution day by day goes higher. Highest number of polluted rivers Maharashtra state has 49 polluted river stretches, highest in the country, which including Mithi, Ulhas, Vaitarna, Godavari, Bhima, Krishna, Tapi, Kundalika, Panchganga, Mula-Mutha, Pelhar and Penganga. 3,000 MLD of untreated sewage and industrial effluents are discharged into the state's water bodies daily. This causes serious impact on human health as well as environmental.[1] So it is necessary to conserve rivers by various human efforts and engineering techniques. Hence we are going to work for the restoration of river by implementing modern river restoration techniques on the basis of principles of self purification of streams.

A. Factors Affecting self- Purification

- 1) **Dilution:** When sufficient dilution water is available in the receiving water body, where the wastewater is discharged, the DO level in the receiving stream may not reach to zero or critical DO due to the availability of sufficient DO initially in the river water before receiving the discharge of wastewater.
- 2) **Current:** When strong water current is available, the discharged wastewater will be thoroughly mixed with stream water preventing deposition of solids. In the small current, the solid matter from the wastewater will get deposited at the bed following decomposition and reduction in DO.
- 3) **Temperature:** The quantity of DO available in stream water is more in cold temperature than in hot temperature. Also, as the activity of microorganisms is more at a higher temperature, hence, the self-purification will take less time at hot temperature than in winter.
- 4) **Sunlight:** Algae produces oxygen in the presence of sunlight due to photosynthesis. Therefore, sunlight helps in purification of the stream by adding oxygen through photosynthesis.



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A Literature Review on Various Types of Materials used for Full/U-Shaped Beam Jacketing Subjected to Pure Torsion

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Abstract: When an eccentric load/force is acted on a structural member other than bending plane which creates rotational moment in the body known as torsion. Concrete is most used worldwide material in construction industry and having weak in tensile strength. So it gets cracked when external load/force crosses equilibrium/compatibility conditions of the concrete body. Improvement in ductility effect, durability and strength etc. of existing structure or earth quake affected structures the most preferably repairing work can be done by using retrofitting method. Since from last three decades the retrofitting of required structures are done by using polymer fiber materials. The polymer fiber jacket are having types like FRP, GFRP, CFRP and aramid etc. Recently remarkable researches has been seen on utilization of ferrocement full, U-shaped jacketing with continue wrapping sheets or in strips. All above said jacketing can be apply in execution work with respect availability, suitability, amount of need and costing etc.

Keywords: Quassi brittle material, Polymer fiber jacket, ferrocement jacket.

I. INTRODUCTION

It is well known that there are four actions like axial, shear, bending and torsion are developed with respect to their nature of loading on the structure. Torsion is always considered as a secondary effect up to 1960's. After that we moved from working stress to limit state and shall go to ultimate one to reduce the factor of safety. Concrete is quassi brittle material weak in tensile strength it gets fractured even introduction of reinforcement in the body of the concrete. Polymer fiber is a composite material used for strengthening purpose of existing structural member to predominant torsion effect. The fibers are generally plastic fiber, glass fiber, carbon fiber, aramid etc. Also other fibers such as paper, wood or asbestos sheet have been used. However all above fiber sheets required a well adhesive like epoxy, vinyl ester etc. to achieve proper surface bonding. Although polymer fiber has near about more than one century history since from 1905 but such material is utilized for concrete as a mainstream technology effectively since from last three decades. Polymer fiber have very high tensile resistance property but relatively less young's modulus than concrete and poor stability in compression so it is utilized as a composite material with concrete. Such material are named as a FRP, GFRP, CFRP, aramid etc. with respect the material used for application. Recently there is also utilization of Ferrocement all sides, U-shaped jacketing with continued wrapping sheets or in strips. All above said polymer fibers can be used in our engineering application with respect to availability, requirement, costing, suitability etc.

II. LITERATURE REVIEW

A. Polymer fiber jacketing like FRP, CFRP, GFRP, ARAMID fiber etc.

Constantin E. Chalioris¹ (2007) has predicted an analytical approach to observe the torsional response of reinforced concrete beams strengthened with fiber reinforced polymer material. To form the theoretical equations he casted twelve tests specimen and took additional database of experimental information for twenty four specimens compiled from other researchers. He introduced that the analysis method employs the combination of two different theoretical models i.e a smeared crack model up to pre cracking stage and softens truss model for post cracking response. Such proposed methodology is achieved through extensive comparisons between analytically predicted behaviour curves and experimentally obtained results. This study allows the realistic modeling of the elastic and the post cracking response of FRP strengthened RC beams under torsion.

Constantin E. Chalioris² (2008) investigated the full torsional behavior of RC beams strengthened with FRP materials and made theoretical analysis of that. The present experimentation deals with the observation of the torsional strengthening of concrete beams without stirrups using epoxy-bonded carbon fibre-reinforced-polymer (FRP) sheets and strips as external transverse reinforcement.



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EFFECT OF ZONE FACTOR ON SEISMIC PARAMETERS OF RC BUILDING

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ABSTRACT: Considerable development in earthquake resistant design has been taken place in recent past. As a result Indian seismic code IS: 1893 has also been revised in year 2016. This paper presents the seismic load estimation for multistory RC buildings as per IS: 1893-2002 and IS: 1893-2016 recommendations. In present study G+12 and G+16 RC Ordinary Moments Resisting Framed buildings (OMRF) were analyzed. The study of effect of zone factor on seismic parameters is performed by seismic coefficient method laid by these two versions. The results were compared in terms of base share, storey drift, time period, storey shear and storey displacement and conclusion were drawn. It is concluded that such study needs to be carried out for individual structure to predict seismic vulnerability of RC framed buildings that were designed using earlier code and due to revisions in the code provisions may have observed vulnerable to earthquake

Keywords: Earthquake, seismic zone, vulnerability, seismic parameters, seismic load.

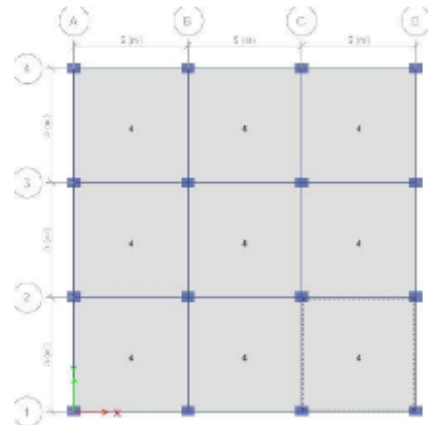
I. INTRODUCTION

There has been an increased awakening among experts, owners, designers, engineers and the society at large about the significance of earthquake protection of structures. At the same time, there has also been persistent research & trainings in the field of seismic engineering, demanding updating of codes and standards from time to time. IS 1893 (Part 1) and IS 13920 has been recently revised, bringing into state of practice, the progress made in research. There is an often-repeated saying, "Earthquakes don't kill people, buildings do." One can't control the seismic hazard in the community where one lives or work, but can certainly influence the most important factor in saving lives and reducing losses from an earthquake by the adoption and enforcement of up-to-date building codes. In present study G+12 and G+16 RC ordinary

moments resisting framed buildings were analyzed. The study of effect of zone factor on seismic parameters is performed by using seismic coefficient method laid by IS 1893:2002 and IS 1893:2016. The results were compared in terms of base share, storey drift, time period, storey shear and storey displacement and conclusion were drawn.

II. DESCRIPTION OF BUILDINGS

The structures representing medium and high rise reinforced concrete framed buildings are considered in this Study. Utility of building is residential building, RC OMRF buildings G+12 and G+16 are considered. All buildings have similar plan dimension 15m X 15m as shown in figure 1. Building is resting on medium soil. Floor to floor height is 3 m, the thickness of slab is 150 mm and size of all columns is 450 mm X 600 mm whereas size of all beams is 230mm X 600 mm. The Imposed load on floor is 3kN/m² and imposed load on roof is 1.5 kN/m². Floor finishes is 1 kN/m² and roof treatment load is 1.5 kN/m². The infill walls are 230 mm thick all around. Damping factor was 5%. The grade of concrete and steel is M20 and Fe415 respectively. Buildings are first designed for gravity loads only as per IS 456:2002.





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A Study of Physico-Chemical Characteristics of Jayanti Nalla Water along with it's Tributaries with Special Emphasis on Quality of Panchganga River

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Abstract: India has been undergoing industrial revolution in a big way during the last three decades. With the recent liberalization of industrial policy, it has got a further boost. Economic conditions of the common man will improve, prosperity will prevail. This is all provability 'one side of the coin' the other side of coin is not very bright. The industries spend solid, liquid and gaseous substances in to the environment. Unless such substances are effectively managed, our environment may get damaged irreparably. The scientific and technological advancements and mismanagement of natural resources have given rise to numerous environmental problems such as pollution of water, soil, air radiation and noise, with consequent adverse effects flora, fauna, human health and well-being, the environment is under more sustained threat from human activity in the 21st century than at any other time in the history with extensive potential social and health consequences.

The increasing rate of human population and rapid pace of industrialization has created many problems of pollution in the rivers and streams. The domestic wastes and industrial effluents are being indiscriminately discharged in the nearby rivers, reservoirs, lakes and tanks. In Kolhapur city similar situation is observed in Panchganga river where four major nallas viz. Jayanti nalla, line bazaar nalla, dudhali nalla and bapat camp nalla, directly release effluents into the river. As the pollutants are discharged in the river through these nallas, the intensity of river pollution is increasing highly. Tremendous increase in population, industrialization, agriculture run off is adding to the pollution of available water resources. So it is worthwhile to assess the quality of the jayanti nalla water and the small streams connecting to it, to study its possible environmental impacts.

Keywords: Jayanti nalla, Panchganga river, industrial effluents, environmental impacts, pollutants

I. INTRODUCTION

In this document A case study is done of Jayanti nalla out of above mentioned four major nallas that carries almost 70 to 75 percent of total effluent generated in Kolhapur. The marked effects are change in physical, chemical and biological properties of streams. The rising contamination sources in urban systems results in chemical pressures often manifested as elevated pollution load, which in turn have damaging impacts on human health.

The study of River water pollution, an environmental crisis a case study of Panchaganga river of Kolhapur city has been done by D. H. Pawar et.al. The conclusions drawn out were that a considerable BOD and COD, low PH, high organic matter, highest dissolved solids indicate water polluted generally by effluents from agro-based industry, leather tanneries, domestic sewage etc. [1]

A Study on the Physico-Chemical Characteristics of Panchaganga River in Kolhapur City, MS, INDIA by Thorvat A.R., et.al is done. In this paper it is found that the physico-chemical and biological parameter features of this river fluctuate from place to place due to discharge of agricultural, municipal as well as industrial wastes into it. Temperature values are ranging from 29°C to 39°C. It is observed that the water, temperature is within the desirable limit. The pH values vary from 5.3 to 8.3 [2]

A study on Water Pollution and Public Health Issues in Kolhapur City in Maharashtra is done by Mr. Swapnil Kamble. In this paper, an attempt has been made to understand the problem of water pollution of Panchaganga river due to urbanization and industrialization and its impact on public health in Kolhapur city and measures to be taken to deal with this problem effectively. [3]

A research study on Water Quality Analysis And Simulation Of Panchaganga River Using Matlab is done by Mr. Riyaj K. Mulla et.al. The outcome briefly describes how MATLAB programming tool can be used for prediction of water quality in river. Also how MATLAB helps to predict future water quality with present data and save time, manpower and other cost for continuous analysis. [4]



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Structural Analysis of Steel Transmission Tower for different Risk Coefficients-A Case Study

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Abstract: The present study deals with the analysis of the steel transmission tower for different risk coefficients located in Pune and Delhi. The analysis of the steel transmission towers has been done by using SAP2000 Integrated Solution for Structural Analysis and Design Software version 20.

A study has been done of both the models subjected to wind and seismic forces as per IS codes and the results so obtained were compared for DIFFERENT RISK COEFFICIENTS with the same configuration. A comparative analysis has been carried out for various parameters like axial force, bending moment, base reaction, torsion, shear force etc. and critical load conditions for both the Pune and DELHI location.

Keywords: SAP2000, risk coefficient, steel transmission tower, wind force, seismic forces

I. INTRODUCTION

This document A case study is done to check whether the same structure along with its same configurations can be safe when they are located at different locations and subjected to wind and seismic forces as per IS codes with different risk coefficient or probability factor (k_1). Analysis is been carried out as per the IS 800:2007(LSM) and IS 1893:2002 codes. The load calculations are done manually but the results obtained are from SAP2000 analysis software v.20.

The study of Analysis and Design of Three and Four Legged 400KV Steel Transmission Line Towers: Comparative Study has been done by Y.M.Ghugal et.al.

The conclusions drawn out were that axial forces and moments are increased in 3 leg transmission tower as compared to 4 leg transmission tower on the contravense there is less steel consumption and area required for 3 leg transmission towers as compared to 4 leg transmission tower. [1]

A study on Structural Analysis and Design of Steel Transmission Tower in Wind Zones II and IV using

STAAD.ProV8i by S.Panwar et.al is done. In this paper it is found that the axial forces and bending moments have changed for the two different locations. [2]

A study on Static and Dynamic Analysis of Transmission Line Towers under Seismic Loads is done by S.Karthik C S et.al. The paper introduces different types of transmission tower and its configuration as per Indian Standard IS-802. A typical type of transmission line tower carrying 220kV single circuit conductors is modelled and analysed using SAP2000 considering forces like wind load, dead load of the structure, breaking load of the conductors and earthquake load as per Indian Standard IS1893: 2000 (part I). The conclusion drawn out from this paper is that Study of different load cases on structure is very important to recognize the case that will cause larger deflection in tower model and to say which case will be optimized and Tower structure with least weight is directly proportional in reduction of the cost. [3]

A research study on Seismic Response of Power Transmission Tower-Line System Subjected to Spatially Varying Ground Motions is done by Li Tian, Hongnan Li, and Guohuan Liu. The outcomes prove that the uniform ground motion at all supports of system does not provide the most critical case for the response calculations. [4]

A study about the design of four-legged steel lattice tower for categorization of gravity and lateral loads under various load combinations for Shimla using IS 800:1984 by Bhardwaj H.L. et.al. [5].

A comparative analysis carried out for different heights of towers using different types of bracing system for wind zones I to V and earthquake zones II to V of India by gust factor method is used for wind load analysis, model analysis and response spectrum analysis, used for earthquake loading by Sharma Kr. K. et al. [6].

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System for Work Hour Measurement of Tractor

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Abstract- In India 70% of the population is engaged in farming hence most of the earning is from farming. Farmers used various types of machineries. As the development in the technology farmer uses tractors which performs all of his work related to agriculture. Tractor companies use an hour meter in their tractors. The warrantee provided by these tractor companies is based on number of working hours of tractors. So, the hour meter is used for the purpose of measuring the working hours of the tractor. Particular period is provided by these companies as per their policies. But these hour meters can be manipulated. People are tampering with hour meters to get extended warranty. And this is being a large problem for companies and mostly the dealers. So there is need to overcome this problem. It can be done by implementing a secret work hour measurement system. So this paper focuses on implementation of System for work hour measurement of tractor.

I. INTRODUCTION

Tractor companies use an hour meter in their tractors. The warrantee provided by these tractor companies is based on number of working hours of tractors. So the hour meter is used for the purpose of measuring the working hours of the tractor. Particular period is provided by these companies as per their policies. But these hour meters can be manipulated. People are tampering with hour meters to get extended warranty. And this is being a large problem for companies and mostly the dealers. So there is need to overcome this problem. It can be done by implementing a secret work hour measurement system. We have presented a system for that work hour measurement. It uses IR sensors to detect the on period of the tractor. And this data is directly transferred to the company by using GSM. So the company will get correct data and will be able to notify the customer about his warrantee period.

Problems to customers: The owner of the tractor needs to remember his warranty period. If the period

is over then his warranty will void. Because of these he loses offers or services provided by company or sometimes it needs to pay fine. So, it is needed to check period to avoid warranty damage. Problem to company: In servicing Centre or showroom they needed to check the data of all customers. Sometimes they needed to visit the vehicle to see working period. Also, they give card to every customer and when they come for servicing it needed to find the information of customer and store the data manually.

II. HARDWARE DESCRIPTION

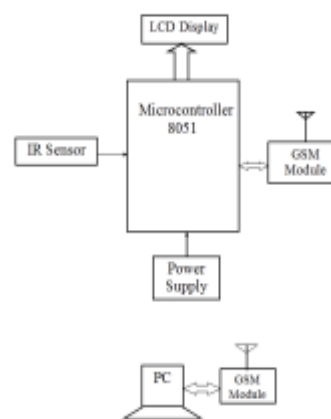


Figure 1: Block Diagram

As shown above block diagram consists of Transmitter & receiver block. Transmitter is connected in tractor & receiver is at service center. Transmitter consists of Microcontroller which is interfaced with IR sensor, LCD display & GSM module. IR sensor is used to keep track on the system. IR sensor is situated near the cooling fan as



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Study and Analysis of Bitumen Mixture Incorporating with Waste Foundry Sand

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Abstract: In 20th century India is aiming to be developed country. The backbone of any developed country is its Infrastructure facility. Now day in India lot of infrastructure projects are going on, in that the road transportation facility is a very important criteria. In recent years there is spontaneous increase in demand of good quality pavements in Urban as well as in rural areas. The construction of good quality roads is mainly depend upon the funding available for construction and quality of raw material available for construction of road, so it very important to construct good quality roads in low budget.

Due to scarcity natural resources, the cost of raw material is increasing day by day, so it is important to find out alternative material for construction of roads. Now a day's various Industrial wastes are utilized for road construction. In Kolhapur city there are lot of foundry industries, which generated lot foundry sand waste. Generally this waste is dumped in open areas. This foundry sand can be utilized for various construction purposes. Famously this is utilized in concrete.

In this study the emphasis is given to use of foundry sand waste in flexible pavement construction. The focus of this study is to analyse the impact of foundry sand on properties of bitumen. In this study we have carried out standard testing of bitumen with percentage replacement of foundry sand to compare the properties of normal bitumen and foundry sand mix bitumen. 2%, 3% & 4 % foundry sand replacement is done and tests are carried out as per standard procedure. After conduction of tests it has been found that the properties of bitumen are changed and those are not as per IS requirements. Only the value of flash point and fire is within the range specified by IS codes.

Keywords: Foundry sand, Bitumen, waste utilization, Highway Engineering, Flexible pavements, Bitumen testing.

I. INTRODUCTION

Infrastructure development is the burning issue now days in India. To meet the requirements in the construction of pavements and other structures bitumen plays the important role and a large quantity of bitumen is being utilized in every construction practices. In civil engineering, due to urbanization the demand for construction materials increases, with the increase in demand there is a strong need to utilize alternative materials for sustainable development.

The problem industry facing today is waste disposal. Reuse of waste in construction or as a construction material may be cheapest and best solution. Foundry sand is abundantly available waste materials which can be used as construction material. Dumping of foundry sand can form the leachate due to its chemical properties. So reuse of foundry sand can be proved economical and environment friendly.

The increase in the popularity of using environmentally friendly, low-cost and lightweight construction materials in construction industry has brought about the need to investigate how this can be achieved by benefiting to the environment as well as maintaining the material requirements affirmed in the standards. By partial replacements of foundry sand in bitumen can reduce the environment degradation and can be a cost effective solution.

To study the properties of bitumen after replacement of foundry sand lab tests are carried out. Penetration test, softening point test, ductility value & Fire and flash point tests are carried out. First upon all tests are carried out on normal bitumen without any replacement of foundry sand & after that tests are carried out on 2%, 3% & 4% foundry sand replacement. All the tests are carried out as per IS code standards.

II. AIM AND OBJECTIVE

Following are the objective of study

- A. To study the properties of bitumen incorporating with the foundry sand
- B. To compare the properties of normal bitumen & Foundry sand mixed bitumen
- C. To find out optimum foundry sand mix proportion for bitumen.



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A Review on Conceptual Model of in Basin Plant to Increase Self –Purification of River

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⁴Assistant Professor DYPCoE, Kolhapur

Abstract: This paper aims to study of conceptual model of in basin plant that will helps to increase self purification rate of river. Now a days purification of river have become problem so the study on this is become important.

The self-purification of natural water systems is a complex process that often involves physical, chemical, and biological processes working simultaneously. ⁽¹⁾ Running water is capable of purifying itself with a distance through a process known as self-purification. This is the ability of the river to purify itself of sewage or other waste naturally. The process of self-purification mainly depends on absorption and dissolution of atmospheric oxygen from a water body surface. This self-purification cannot be depended upon to bring about complete purification, but it may well improve the water quality sufficiently. When disposal of sewage in the stream, the stream water is examined towards down streams, it will be observed that the quality of stream water successively changes. Near the place of disposal, the water will be polluted and it becomes purified after some travel towards the downstream side due to natural forces of purification.

Keywords: River Self Purification, Water Treatment, BOD, COD.

I. INTRODUCTION

River restoration is the process of managing rivers by various operations to reinstate natural processes to restore biodiversity, providing benefits to both people and wildlife. Reintroducing natural processes can reshape rivers to provide the diversity of habitats required for a healthy river ecosystem and ensure their long-term recovery by addressing the root cause of the issue. River degradation has led to an extensive loss of habitats and additional pressures on the aquatic and terrestrial species that use them. It also affects the quality of our drinking water, resilience to climate change and ability to store and hold back flood water. Damage to river systems has been so extensive that an urgent need has emerged, not only to conserve, but to restore these systems. In recent years, severe problem in front of whole nation is water pollution. We have seen that various national authorities are works for pollution control. Still the level of pollution day by day goes higher. Highest number of polluted rivers Maharashtra state has 49 polluted river stretches, highest in the country, which including Mithi, Ulhas, Vaitarna, Godavari, Bhima, Krishna, Tapi, Kundalika, Panchganga, Mula-Mutha, Pelhar and Penganga. 3,000 MLD of untreated sewage and industrial effluents are discharged into the state's water bodies daily. This causes serious impact on human health as well as environmental.[1] So it is necessary to conserve rivers by various human efforts and engineering techniques. Hence we are going to work for the restoration of river by implementing modern river restoration techniques on the basis of principles of self purification of streams.

A. Factors Affecting self- Purification

- 1) **Dilution:** When sufficient dilution water is available in the receiving water body, where the wastewater is discharged, the DO level in the receiving stream may not reach to zero or critical DO due to the availability of sufficient DO initially in the river water before receiving the discharge of wastewater.
- 2) **Current:** When strong water current is available, the discharged wastewater will be thoroughly mixed with stream water preventing deposition of solids. In the small current, the solid matter from the wastewater will get deposited at the bed following decomposition and reduction in DO.
- 3) **Temperature:** The quantity of DO available in stream water is more in cold temperature than in hot temperature. Also, as the activity of microorganisms is more at a higher temperature, hence, the self-purification will take less time at hot temperature than in winter.
- 4) **Sunlight:** Algae produces oxygen in the presence of sunlight due to photosynthesis. Therefore, sunlight helps in purification of the stream by adding oxygen through photosynthesis.



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EFFECT OF ZONE FACTOR ON SEISMIC PARAMETERS OF RC BUILDING

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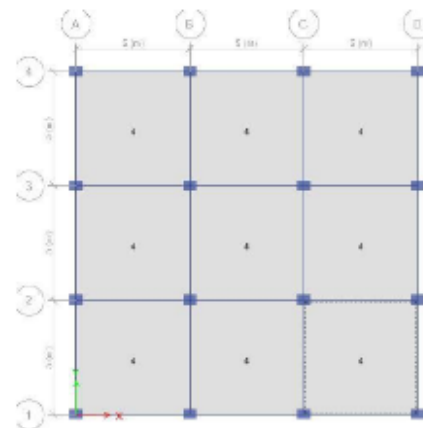
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A Literature Review on Various Types of Materials used for Full/U-Shaped Beam Jacketing Subjected to Pure Torsion

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Abstract: When an eccentric load/force is acted on a structural member other than bending plane which creates rotational moment in the body known as torsion. Concrete is most used worldwide material in construction industry and having weak in tensile strength. So it gets cracked when external load/force crosses equilibrium/compatibility conditions of the concrete body. Improvement in ductility effect, durability and strength etc. of existing structure or earth quake affected structures the most preferably repairing work can be done by using retrofitting method. Since from last three decades the retrofitting of required structures are done by using polymer fiber materials. The polymer fiber jacket are having types like FRP, GFRP, CFRP and aramid etc. Recently remarkable researches has been seen on utilization of ferrocement full, U-shaped jacketing with continue wrapping sheets or in strips. All above said jacketing can be apply in execution work with respect availability, suitability, amount of need and costing etc.

Keywords: Quasi brittle material, Polymer fiber jacket, ferrocement jacket.

I. INTRODUCTION

It is well known that there are four actions like axial, shear, bending and torsion are developed with respect to their nature of loading on the structure. Torsion is always considered as a secondary effect up to 1960's. After that we moved from working stress to limit state and shall go to ultimate one to reduce the factor of safety. Concrete is quasi brittle material weak in tensile strength it gets fractured even introduction of reinforcement in the body of the concrete. Polymer fiber is a composite material used for strengthening purpose of existing structural member to predominant torsion effect. The fibers are generally plastic fiber, glass fiber, carbon fiber, aramid etc. Also other fibers such as paper, wood or asbestos sheet have been used. However all above fiber sheets required a well adhesive like epoxy, vinyl ester etc. to achieve proper surface bonding. Although polymer fiber has near about more than one century history since from 1905 but such material is utilized for concrete as a mainstream technology effectively since from last three decades. Polymer fiber have very high tensile resistance property but relatively less young's modulus than concrete and poor stability in compression so it is utilized as a composite material with concrete. Such material are named as a FRP, GFRP, CFRP, aramid etc. with respect the material used for application. Recently there is also utilization of Ferrocement all sides, U-shaped jacketing with continued wrapping sheets or in strips. All above said polymer fibers can be used in our engineering application with respect to availability, requirement, costing, suitability etc.

II. LITERATURE REVIEW

A. Polymer fiber jacketing like FRP, CFRP, GFRP, ARAMID fiber etc.

Constantin E. Chalioris¹ (2007) has predicted an analytical approach to observe the torsional response of reinforced concrete beams strengthened with fiber reinforced polymer material. To form the theoretical equations he casted twelve tests specimen and took additional database of experimental information for twenty four specimens compiled from other researchers. He introduced that the analysis method employs the combination of two different theoretical models i.e a smeared crack model up to pre cracking stage and softening truss model for post cracking response. Such proposed methodology is achieved through extensive comparisons between analytically predicted behaviour curves and experimentally obtained results. This study allows the realistic modeling of the elastic and the post cracking response of FRP strengthened RC beams under torsion.

Constantin E. Chalioris² (2008) investigated the full torsional behavior of RC beams strengthened with FRP materials and made theoretical analysis of that. The present experimentation deals with the observation of the torsional strengthening of concrete beams without stirrups using epoxy-bonded carbon fibre-reinforced-polymer (FRP) sheets and strips as external transverse reinforcement.

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TRACK PAPER NEW



System for Work Hour Measurement of Tractor

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Abstract- In India 70% of the population is engaged in farming hence most of the earning is from farming. Farmers used various types of machineries. As the development in the technology farmer uses tractors which performs all of his work related to agriculture. Tractor companies use an hour meter in their tractors. The warrantee provided by these tractor companies is based on number of working hours of tractors. So, the hour meter is used for the purpose of measuring the working hours of the tractor. Particular period is provided by these companies as per their policies. But these hour meters can be manipulated. People are tampering with hour meters to get extended warranty. And this is being a large problem for companies and mostly the dealers. So there is need to overcome this problem. It can be done by implementing a secret work hour measurement system. So this paper focuses on implementation of System for work hour measurement of tractor.

I. INTRODUCTION

Tractor companies use an hour meter in their tractors. The warrantee provided by these tractor companies is based on number of working hours of tractors. So the hour meter is used for the purpose of measuring the working hours of the tractor. Particular period is provided by these companies as per their policies. But these hour meters can be manipulated. People are tampering with hour meters to get extended warranty. And this is being a large problem for companies and mostly the dealers. So there is need to overcome this problem. It can be done by implementing a secret work hour measurement system. We have presented a system for that work hour measurement. It uses IR sensors to detect the on period of the tractor. And this data is directly transferred to the company by using GSM. So the company will get correct data and will be able to notify the customer about his warrantee period.

Problems to customers: The owner of the tractor needs to remember his warranty period. If the period

is over then his warranty will void. Because of these he loses offers or services provided by company or sometimes it needs to pay fine. So, it is needed to check period to avoid warranty damage. Problem to company: In servicing Centre or showroom they needed to check the data of all customers. Sometimes they needed to visit the vehicle to see working period. Also, they give card to every customer and when they come for servicing it needed to find the information of customer and store the data manually.

II. HARDWARE DESCRIPTION

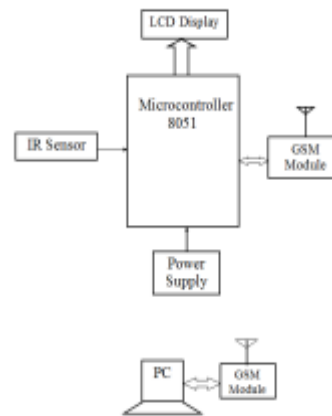


Figure 1: Block Diagram

As shown above block diagram consists of Transmitter & receiver block. Transmitter is connected in tractor & receiver is at service center. Transmitter consists of Microcontroller which is interfaced with IR sensor, LCD display & GSM module. IR sensor is used to keep track on the system. IR sensor is situated near the cooling fan as

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RESPONSIVENESS OF HEIS TO INDUSTRIAL REVOLUTION 4.0

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ABSTRACT

Higher Education (HE) is the integral part of developed and developing countries. HE ensures world about well trained, skilled and creative manpower. There is direct relation of revolution in industry and Higher Educational Institutes (HEIs) as graduates contributes in new innovative technologies by means of research, development, testing and servicing. Hence, it is the responsibility of HEIs to mold itself in terms of resources, curriculum, teaching learning mechanism, assessment tools, students skill development, lifelong learning strategies, interaction with stake holders etc. This paper puts light on some of these aspects where HEIs which are affiliated to universities has to respond immediately as a response to advancements in Industrial Revolution 4.0.

1. INTRODUCTION

Any revolution is indication of liveliness in that field. World has observed three industrial revolutions and experienced magic of it in industrial production and in turn on livelihood of all livings. The first industrial revolution is derived by Newton's laws of motion which made it possible to design steam engines that atomized much of the work done by humans and made humans more productive (Bo Xing and Tshilidzi Marwala 2018, p.1; Nancy W. Gleason 2018, p.2). The second industrial revolution which is recognized as electric generation has a impact of Faraday and Maxwell's theory of magnetic and electric forces. The discovery of transistor given birth to third industrial revolution which is known as electronic generation. It gifted world with Computers and Internet. Fourth industrial revolution named 'Industry 4.0' started in early 2000s with Germany's manufacturing industry. This has the power to change many things across a broad spectrum. It will transform industries to a large extent such that much of the work that exists today will not exist in next 50 years. According to survey by Deloitte and Forbes Insights, in Industry 4.0 revolution the daily lives will be full of smart technologies as an effect of revolution in digital and physical technological world. Though it will create vast possibilities and opportunities; it will also create uncertainty. According to opinion of Chun-Yuan Gu, in this revolution the knowledge, which takes an organization decades to gain, becomes more accessible to new organizations with less experience and with the right technology (Deloitte and Forbes Insights 2018, p.22).

The education sector will not stand apart from this advancement of Industry 4.0. This may introduce new requirements for the profile and qualification of graduates. It may demand even more than before, people's capacity for initiative, entrepreneurship skills, digital literacy, critical thinking and ability to define personal learning needs and identify possible sources for such learning. To produce such graduates and to cope up with requirements for the same is now a most demandable task for HEIs. HEIs has focus on meeting different needs and requirements of various target groups. But to produce the graduates of above qualities, HEIs has to be flexible and always there is space for a well profiled, professional HEIs to introduce such flexibilities. New patterns and tools of learning as well as assessment may be introduced to produce more flexibility. It may need a substantial shift in curricula development. The HEIs has to transform from "school" to a "hub" connecting various stakeholders within their community, allowing suitable provisions for combination of teaching, learning, research and knowledge exchange involving partners and collaborators from outside education (Alexandre Wipf 2017, P.7). While all higher education institutions will put some focus on meeting the digitalization agenda, there was a shared belief that professional higher education should still find suitable approaches to address different target groups needing more profession-specific skills and competences. At the same time, the prevailing expectation is that the digitalization agenda will enhance the opportunities for internationalization and opening new markets for those who will be ready.

The rest of the paper is organized as follow: second section summarizes the response of HEIs to first 3 industrial revolutions, third section briefs the responsiveness of HEIs to Industrial Revolution 4.0 and fourth section presents conclusion.

2. RESPONSIVENESS OF HEIS TO FIRST THREE INDUSTRIAL REVOLUTIONS

The first industrial revolution based on steam engines brought a dramatic shift in the classical education. A curriculum with more diverse degree options and new general education programs designed to produce breadth of study through the selection from a variety of elective courses. The second industrial revolution intended to open the industrial classes in education system to create newly trained technicians and engineers. In third



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Study of Steam Operated Jaggery Making System

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Abstract— In rural India bagasse is used as fuel for production of jaggery. There is big loss of heat as well as ash from it may be mixed with product which reduces its purity. so we need to check clean and more efficient process for jaggery. We have iterative study for different modes of jaggery making pan which uses steam as heating element. Here we discussed about the pan with steam coil immersed in sugarcane juice. Its design and comparison with pan with baffles is made.

Key words: Jaggery, Sugarcane Juice

I. INTRODUCTION

Jaggery is natural, traditional, sweetener made from sugarcane juice. It consumes 20.36% of sugarcane grown in India [5]. Jaggery is product of cottage industries prone to production inconsistencies and inefficiencies, use of chemicals, poor hygiene and quality. In present system of jaggery making there are problems in crushing, filtration, heating, packing. Heating system affects quality, productivity & production cost so there is needed to improve heating system.

II. STUDY OF JAGGERY MAKING SYSTEM

In available heating system bagasse is used. This system requires heating chamber & 45% heat is required for making jaggery. Out of 45% heat from bagasse is used as

- 6% required in present temperature from 27° to 99°.
- 39% heat is required for removal of water in the form of steam.
- 0.1% to change liquid to solid jaggery

We have scope to reduce 55% heat losses due to bagasse system by the use of steam. 5.39% of heat of 45% heat from bagasse is required to remove water or steam from juice & we can reuse this steam for heating the juice.

The temperature (degree celcius) vs time (minutes) graph for jaggery making process is as shown in fig.1 within this process different additives to be added and ash with impurities is to be removed. This process is given in table 1.

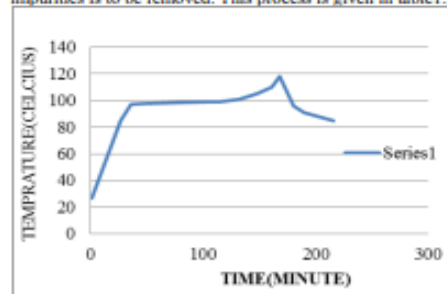


Fig. 1: Jaggery making from sugarcane juice

Temperature	Add additives
27-85 (27min)	Okra powder
85-97(9 min)	First ash(Dhor mali)
85-97(12min.)	Use of acid
98-99(54min)	Boiling of syrup
99-101(12min)	Second ash(sonmali)
101-105(16min)	Splitting of syrup
105-118(20 min)	Solid jaggery

Table 1: Time for each process and addition of additives and removal of ash

III. DESIGN OF PAN

Properties of steam:-

- Pressure of steam= 1.962 N/m²
- Temperature of steam= 120°C
- Specific enthalpy of steam =2201.6KJ/Kg

Properties of sugarcane juice:-

- Temperature range= 378k to 391k
- Thermal conductivity = 0.475 to 0.493 w/mk
- Density= 1044.5 to 1189.5 Kg/m³
- Specific heat at constant pressure = 3.67 KJ/Kg k

Process	Temperature °C	Time in Minute	Total Mass Flow Rate in KJ	Steam Flow Rate in Kg	Steam Flow Rate per Hour Kg/hr
1	27-85	27	851.44	0.387	0.86
2	85-97	9	158.54	0.071	0.4733
3	85-97	12	689.26	0.0305	1.525
4	98-99	54	2720.37	1.20	1.33
5	99-101	12	1142.91	0.50	2.5
6	101-105	16	1376.17	0.60	2.28
7	105-118	20	1498.80	0.66	1.98
Total	-	148	8437.49	3.723	10.9483

Table 2: Calculation of mass flow rate of steam & energy requirement

Pan is designed on basis of total heat required to the system by considering parallel flow type of heat exchanger. It gives

U = Overall Heat Transfer Coefficient= 410

D= Diameter of Pan = 0.40 m

L= Length of Tube=3.18m

A = Area of Pan=0.126 m²

We take trail for jaggery making on this pan having coils of steam pipe. The readings of this trail are as follows-

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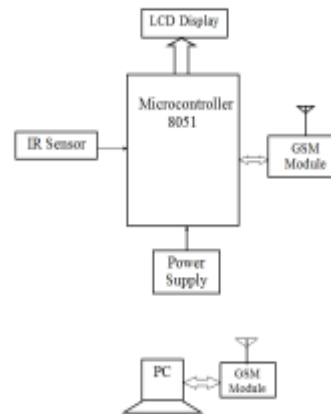


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