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Initiatives in ICT For Rural Development: An Indian Perspective

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***Abstract**: Various initiatives in the recent past portrayed the significant role that the I.C.T plays in the realm of rural development. Several projects have reduced the costs, and it also has increased transparency. A large number of rural e-Governance applications, developed as pilot projects were aimed at offering easy access to citizen services and improved processing of government to citizen transactions. This paper presents a brief review of the innovative projects in Information and communication technologies for rural development and how far it has contributed. The other aim is to ponder over the achievements and the failures of ICT in the sustainable development march. The analysis also indicates communication related initiatives and projects for development before media liberalization and post media liberalization.*

***Keywords**: Rural Development, Information and Communication Technologies, e-Governance, kiosk, Online Transaction Processing.*

Introduction

ICTs are those technologies that can be used to interlink information technology devices such as personal computers with communication technologies such as telephones and their telecommunication networks. The PC and laptop with e-mail and Internet provides the best example. Michiels and Van Crowder (2001) have defined ICTs „as a range of electronic technologies which when converged in new configurations are flexible, adaptable, enabling and capable of transforming organisations and redefining social relations". The range of technologies is increasing all the time and „there is a convergence between the new technologies and conventional media" (Michaels and Van Crowder, 2001:8). This rapid and ongoing convergence means that devices such as digital cameras, digital video cameras and players, personal digital assistants, slide projectors and mobile telephones are also compatible with more traditional media such as radio (digital, satellite),television (cable, digital, satellite). Thus most devices can now be linked to others to share and exchange information and allow it to be used in such a way that they can also be categorised as ICTs. Even books are being incorporated into ICTs either through the potential for informal web publishing or more formal digital book publishing with designated readers or „e-books". ICTs, therefore, are an expanding assembly of technologies that can be used to collect, store and share information between people using multiple devices and multiple media.

There is no proper definition for rural development. But logically, it means development for rural areas, to empower the voiceless, reduce exploitation. One of the major driving forces for rural development is communication.

In recent times, ICT is playing a role of catalyst in rural development. It is used in every aspect of information, management and governance of development.

ICT means application of innovative way to facilitate information and communication technologies in the rural domain. The advancement in ICT can be utilized for providing relevant information and service to the farmers, thereby facilitating an environment for more rewarding agriculture. Farmers of rural areas can be educated with modern means of cultivation through ICT.

How ICT can facilitate rural development:

- Efficient services for Health Care and Education
- Access to vast Education in content for improving literacy
- Help farmers with value based information to improve their productivity and provide timely information to traders, artisans etc
- Entertainment through broadcasting and multimedia services at doorsteps in rural areas.
- Relevant News at one"s door-step.

Neural Networks For Intrusion Detection And Its Applications

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Abstract: **With rapid expansion of computer networks during the past decade, security has become a crucial issue for computer system. Different soft-computing based methods have been proposed in recent years for the development of intrusion detection system. Different neural network structures are analyzed to find the optimal neural network with regards to the number of hidden layers. Misuse detection is the process of attempting to identify instances of network attacks by comparing current activity against the expected actions of an intruder. Most current approaches to misuse detection involve the use of Rule-based expert systems to identify indications of known attacks. These techniques are less successful in identifying attacks which vary from expected patterns. Artificial neural networks provide the potential to identify and classify network activity based on limited, incomplete, and nonlinear data sources.**

***Key Words*: Intrusion Detection, Misuse Detection, Neural Networks, Computer Security.**

I. INTRODUCTION

The rapid development and expansion world wide web and local network systems have changed the computing world in the last decade. The highly connected computing world has also equipped the intruders and hackers with new facilities for their destructive purposes. The costs of temporary or permanent damages caused by unauthorized access of the intruders to increasingly implement various systems to monitor data flow in their networks. These systems are generally referred to as Intrusion Detection Systems (IDSs).

There are two main approaches to the design of IDSs. In a misuse detection based IDS, intrusions are detected by looking for activities that correspond to known signatures of intrusion or vulnerabilities. On the other hand, anomaly detection based IDS detects intrusions by searching for abnormal network traffic. The abnormal traffic pattern can be defined either as the violation of accepted thresholds for the legitimate profile developed for his/her normal behavior.

One of the most commonly used approaches in expert system based on intrusion detection is a rule-based analysis using Denning's profile model. Soft computing is a general term for describing a set of optimization. Processing techniques for this are Fuzzy Logic (FL), Artificial Neural Networks (ANNs), Probabilistic reasoning (PR), and Genetic Algorithms (GAs). It is a capable of disclosing the latent patterns both abnormal and normal connection to audit records and generalize the patterns to new connection records of the same class. In the previous studies, the neural networks have been implemented with the capability to detect normal and attack connections.

II. INTRUSION DETECTION SYSTEMS

The timely accurate detection of computer and network system intrusion has always been an exclusive goal for system administrators and information security researchers. While the complexities of host computers already made intrusion detection which is a difficult endeavor, to increasing prevalence of distributed network-based systems and insecure networks, such as the need for intrusion detection is very necessary has the Internet is greatly increased.

A. Classification of Intrusion Detection Systems

Intrusion Detection Systems can be classified into three categories:

Host-based IDS
Evaluate information found on a single or multiple host systems, including contents of operating systems, system and application files.

Network-based IDS
Evaluate information captured from network communications, analyzing the stream of packets traveling across the network. Packets are captured through set of sensors.

Vulnerability-Assessment
Vulnerable attacks are to detect on internal networks and firewalls.There are two primary models to analyze events to detect attacks:

Use of Rectangular Microstrip Array Antennas for Triple Band Operations

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Abstract: *This paper presents a novel design of two elements rectangular microstrip array antenna with parasitic wire around (TERMAA) for triple band operation and omni directional radiation pattern. Further, quadruple bands are obtained by simply minimizing the area of ground plane of TERMAA. Later, by truncating the corners of minimized ground plane, the upper two bands are merged together resulting wider triple band operation. The magnitude of each operating band is found to be 19.1, 15.43 and 79.23% respectively with a maximum gain of 3.9 dB. This enhancement does not affect the nature of radiation characteristics. The proposed antennas may find applications for microwave systems operating at WLAN (2.4 – 5.2 GHz), HIPERLAN/2 (5.725 – 5.825 GHz) and X to Ku (8 – 18.5 GHz) band of frequencies. Details of antenna design are described and experimental results are discussed.*

Key Word*: microstrip antenna, array antenna, minimized ground plane, triple-band, omni directional.*

I. Introduction

Recent developments in wireless communication system often require antenna with planar geometry, light weight, ease in fabrication and capable of operating at more than one band of frequencies. The microstrip patch antenna can meet these requirements. Further, dual or triple band frequency operations have gained wide attention in many microwave communication system. When system requires operating at two or more distinct band of frequencies, dual or triple frequency patch antennas may avoid the use of separate antennas for each operating band [1].

Most of the dual frequency microstrip antenna design uses reactively loaded elements, while other design uses a multistructer or multipatches [2-5] and hence, becomes complex in their manufacturing procedure. To overcome this, in present study an experimental effort is made to get triple band operation by using simple two elements rectangular microstrip array antenna wound with a parasitic strip around the patches i.e. TERMAA. Further, by minimizing the ground plane of this antenna, the quadruple and enhancement of impedance bandwidth is achieved

II. Description of Antenna Geometry

The proposed antennas are designed using low cost glass epoxy substrate material of thickness h = 0.16 cm, permittivity $\varepsilon r = 4.2$ and area = A×B. The antennas may be designed using low dielectric constant substrate material but the use of high dielectric constant of substrate materials reduces radiation losses because most of the EM field is concentrated in the dielectric between the conductive strip and the ground plane [6]. The artwork of the proposed antennas is sketched using computer software Auto-CAD 2006 to achieve better accuracy. The antennas are fabricated using photolithography process.

Figure 1 shows the top view geometry of TERMAA comprising of parasitic strip around the radiating patches. The length L and width W of the patch is designed for resonant frequency of 5 GHz, using the equations available for design of rectangular patch [7]. The width of parasitic strip is Wp and is kept away from the side edges of the patch by a distance R. The gap between the edges of strip and quarter wave transformer is again R. The distance D between the two radiating elements from their centre should be

$\lambda o/2$ for minimum side lobes [8], where λo is the free space wavelength in cm. But in Figure 1, D is taken as $\lambda o/2.33$ in order to keep the feed line as compact as possible for minimum feed line loss. Further, when D is less than $\lambda o/2.33$; it becomes difficult to accommodate the feed arrangement between the array elements. Hence $D = \lambda o/2.33$ is treated as optimum in this case. The parallel feed arrangement has wideband performance over series feed and hence selected in this case to excite the array elements of Figure 1. The feed arrangement shown in Figure 1 is a contact feed and has advantage that it can be etched simultaneously along with antenna elements. The parallel feed arrangement of Figure 1 consists of a 50 Ω microstrip feedline of length L50 and width W50 is connected to 100 Ω microstrip feedline of length L100 and width W100 to form a two way power divider. A 100 Ω quarter wave matching transformer of length Lt and width Wt is connected between 100 Ω microstrip feedline and mid point of the radiating elements in order to ensure perfect impedance matching. The bottom plane of TERMAA is tight ground plane copper shielding. The ground plane shielding of TERMAA is minimized as shown in Figure 2 retaining its top geometry. This antenna is named as modified ground plane two elements rectangular microstrip array antenna (MGTERMAA). The size of copper area on the ground plane is taken as A1×B. Later, the corners of the ground plane of MGTERMAA are truncated as shown in Figure 3 retaining its top geometry. This antenna is named as corner truncated ground plane two element rectangular microstrip array antenna (CTGTRMAA). The corners are truncated by length Lc and width Wc. The various antenna parameters of Figure 1 to Figure 3 are given in Table 1.

Usage of Microstrip Line Fed Shorted Patch Antenna: A review

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Abstract: *Compact Microstrip antennas have recently received much attention due to the increasing demand of small antennas for personal communication equipment. The problem of achieving impedance bandwidth greater than or about 10% for present day cellular communication systems for a compact microstrip antenna is becoming an important topic in microstrip antenna design. A study of low cost Microstrip line fed shorted patch antenna has been presented in this paper. Because both shorted patch and 50Ω microstrip feed line have an air substrate, the material cost is reduced to a minimum. Also a comparative study of the antennas without and with slots of different geometries has been presented. The proposed antenna without slot has a band width of 18.5%. A Considerable size reduction is obtained with the vertical slots and an enhanced bandwidth of 25.2% with the inclined slots. The designs are suitable for applications in DCS (Digital Communication Systems) base station.*

Key Word*: Microstrip antenna, Compact antenna, Shorted patch, Microstrip line fed*

I. Introduction

With the ever increasing demand for mobile communication and emergence of many systems, it is important to design broadband antennas to cover wide frequency range [1]. The design of an efficient wideband small size antenna for recent wireless applications is a major challenge. Microstrip patch antennas have found extensive application in wireless communication system owing to their advantages such as low profile, conformability, low cost fabrication and ease of integration with feed networks [2]. However, conventional Microstrip patch antennas suffer from narrow bandwidth. This poses design challenges for the designer for broad band applications [3]. There are well known methods to increase the bandwidth of antennas including increase of the substrate thickness, the use of dielectric substrate of low dielectric constant, the use of various impedance matching and feeding techniques and use of slot antenna geometry[4,5].

In this paper, construction of the prototype of low cost Microstrip line fed shorted patch antenna with and without slots and their comparative study has been presented. The radiating patch is shorted to ground with the help of shorting plates of suitable width. Both Microstrip feed line and shorted patch have air substrate of different heights. The results are indicated by the frequency versus return loss curves obtained and the measured radiation patterns in the H plane.

II. Antenna Geometry

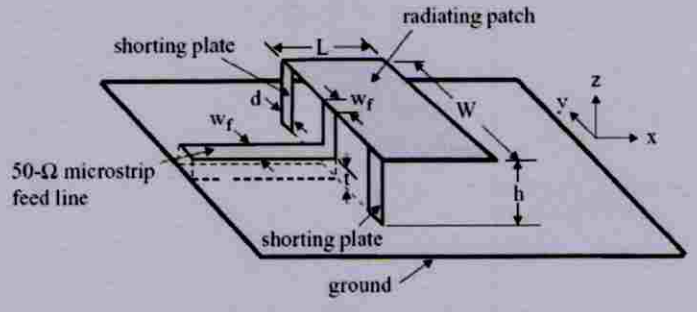

Figure 1(a) Geometry of Broadband Microstrip line fed shorted patch antenna

Figure 1(a) shows the antenna geometry. The radiating patch has length 'L' and width 'd'. It is supported by plastic posts above the ground plane. The distance of the radiating patch to the ground plane is 'h'. The radiating patch is short circuited to the ground plane by using identical shorting plates of width 'd' placed at two ends of one of the patch's radiating edges. At the centre of the patch edge with shorting plates, a 50Ω Microstrip feed line is used to directly feed the radiating patch. The strip of the feed line has a width 'Wf' and is connected to the radiating patch at the patches shorted edge by using conducting strip of same width 'Wf'. The air substrates of shorted patch and feed line have heights 'h' & 't' respectively. By selecting suitable value of 'h' a wide impedance bandwidth can be obtained. Good impedance matching of the proposed antenna is easily achieved by adjusting width of the shorting plates.

For the present prototype which may be used for DCS base station application, the following design parameters have been chosen.

L=23.5mm, W=54mm, d=5.5mm, Wf=16mm, h=8mm, t=3.2mm.

Design of an improved Condition-based Maintenance Control Systems for Fleet Management activities

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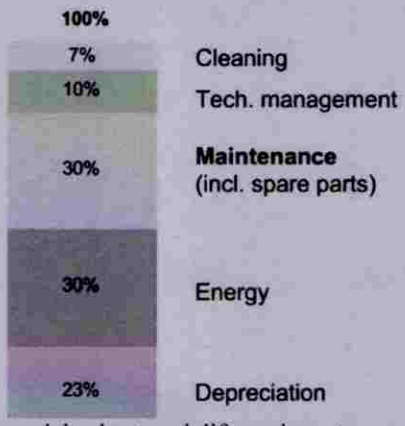
Abstract: *The advancement in the domain of big-data technologies and machine-to-machine (M2M) interconnectivity is creating new possibilities for real-time analysis of machine components for identifying and avoiding breakdowns. Designing of such environment with a high-speed fleet requires special attention to the design methodologies used in collecting the operating requirements from the users and transforming it into big-data parallel architectures is one of the crucial task.This transformation can lead to provide the capability of exhibiting fault-tolerant behavior and load-balancing features. This paper describes the 3 M2M approach for the big- data condition-based maintenance system and the requirement specification steps involved in building such a system, along with the cost-savings benefited from the system.*

Keywords— *Condition-based maintenance, Fleet-management, M2M Telematics, Predictive Analytics*

I. Introduction

Approximately 30% of the life-cycle costs of a high-speed vehicle are spent on the maintenance of the vehicle, the largest spend besides energy [1]. The overall life-cycle cost distribution for a high-speed fleet is as shown below.



Pain-points that customers usually complain about such life-cycle costs are:

- Maintenance is the highest cost factor in the operations of high speed vehicles, besides energy and depreciation.
- Over a period of time, maintenance costs exceed the depreciation.
- Approximately 40% of the maintenance goes for the material / spare parts costs, while the remaining 60% amounts

to personnel costs.

- For an operational fleet, the depreciation and energy costs stay constant during the fleet's life-cycle, leaving the

maintenance cost as the only major cost position available for optimization [1][2].

- Thus, reducing the maintenance costs highly improves the profit margins for operators. The different maintenance

strategies followed by manufacturers and operators in this regard are as follows:

Corrective Maintenance: This is a Run-till-Failure methodology without any specific plan of maintenance in place.
Vehicle is considered to be functional and fit until it breaks-down.

Cons:

- Unexpected and uncontrolled production downtimes.
- Risk of secondary failures and collateral damage.
- Uncontrolled costs of spare parts and overtime labor.

Pros:

Nonlinearity Effect of Seismic Response of an Arch Dam

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Abstract: *In the current paper, the impact of establishment nonlinearity on the seismic reaction of a current curve dam is explored. Luzzone curve dam in Switzerland is chosen as a contextual analysis. The establishment nonlinearity is begun from opening/slipping of joints between a potential wedge at the left projection and remaining establishment. Store's water is accepted compressible and the coupled framework is understood at the same time. Additionally, the establishment is expected massed medium by means of gooey limit on the far-end shortened limit. Two cases are considered in the investigations; the framework applying store pressure on the establishment; the framework with no repository pressure applied on the establishment. The outcomes uncover that the disregarding repository pressure on the establishment overestimates the reaction of the dam body. At long last, in view of the led examinations, considering establishment nonlinearity has no huge impact on the outcomes in the considered case because of unique plan of the body shape.*
Keywords: *Concrete Arch Dam; Foundation Nonlinearity; Massed Foundation; Seismic Analyses.*

I. Introduction

The landslide sustained by some dam abutments i.e., Malpasset Dam in France and Vajont dam in Italy, altogether have attracted considerable research interest in the stability analysis of arch dams over past fifty years [1-4]. The safety evaluation of an arch dam should identify all factors in analyses to ensure that the structural stability of the dam is sustained. The stability of a concrete arch dam is strongly dependent on foundation and abutments on which the dam rests. In this regard, the stability against wedge sliding of arch dam-foundation has been subject of many researches. In 1965, Londe [5] proposed a fast approach to evaluate stability of rock wedges under thrust and uplift forces in dams.

In 1999, Boyer and Ferguson [6] studied important factors to be considered in evaluating sliding stability of rock foundations for dams. Noble and Nuss [7] studied nonlinear seismic behaviour of Morrow Point dam considering a left abutment wedge. Their results revealed that the contraction joint openings are more severe when the wedge is not restricted or tied to the dam or foundation. At the same time, She [8] carried out numerical analysis of deformation and stability as well as effectiveness of the reinforcement at the right abutment of an arch dam. The results showed that the abutment might slide along the intersection of a fault. In 2005, Yu et al. [9] evaluated stabilities of sliding blocks on the abutments of a gravity arch dam by incorporating the results of finite element method analyses.

Some researchers have examined seismic responses of arch dams including rock wedges on the abutments by different approaches. Wang and Li [10] considered seismic responses of a high arch dam by experimental model. The system included the arch dam, contraction joints, and some parts of a reservoir, partial foundation and potential rock wedges on the abutments in which the mechanical properties including uplift on the kinematic planes were carefully simulated. In 2008, Mills-Bria et al. [11] investigated seismic nonlinear analyses of arch dams considering potential block in the foundation using explicit finite element techniques.

Evaluating response of arch dam abutments to extreme loads such as earthquake has been conducted using static equilibrium equations approach like as Londe conventional method combined by finite element method [12]. Zenz et al. [13] investigated seismic stability of a rock wedge in the abutment of Luzzone dam. However, in their research the foundation was assumed as a massless medium. Takalloozadeh and Ghaemian [14] investigated Shape optimization of concrete arch dams considering abutment stability. The wedges in contact with the dam body were considered in their study. They concluded that considering abutment stability can change the optimum shape of arch dams and it is more important than tension stresses in the concrete arch dam body.

In the present paper, the effect of foundation nonlinearity on the seismic response of an existing arch dam is investigated. Luzzone arch dam in Switzerland is selected as the case study. The foundation nonlinearity is originated from opening/slipping of joints between a potential wedge at the left abutment and remaining foundation. Reservoir's water is assumed compressible and the coupled system is solved simultaneously. Also, the foundation is assumed massed medium via viscous boundary on the far-end truncated boundary. Two cases are considered in the analyses; the system including reservoir pressure on the foundation; the system with no reservoir pressure applied.

A Survey on Anomaly Based Host Intrusion Detection System

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Abstract. An intrusion detection system (IDS) is hardware, software or a combination of two, for monitoring network or system activities to detect malicious signs. In computer security, designing a robust intrusion detection system is one of the most fundamental and important problems. The primary function of system is detecting intrusion and gives alerts when user tries to intrusion on timely manner. In these techniques when IDS find out intrusion it will send alert massage to the system administrator. Anomaly detection is an important problem that has been researched within diverse research areas and application domains. This survey tries to provide a structured and comprehensive overview of the research on anomaly detection. From the existing anomaly detection techniques, each technique has relative strengths and weaknesses. The current state of the experiment practice in the field of anomaly-based intrusion detection is reviewed and survey recent studies in this. This survey provides a study of existing anomaly detection techniques, and how the techniques used in one area can be applied in another application domain.

1. Introduction

Intrusion detection refers to detection of malicious activity (break-ins, penetrations, and other forms of computer abuse) in a computer related system. These malicious activities or intrusions are interesting from a computer security perspective. Intrusion detection systems are one of the major parts of computer security. An Intrusion Detection System (IDS) is a system security technology for detecting vulnerability exploits against a computer system that analyses Network / system functions. Different categories of IDS include Host-based IDS (HIDS), Network-based IDS (NIDS), (HIDS), and Wireless IDS [1]. There is Hybrid IDS which combines various IDS categories. Host-based IDS monitors the activities of a single host and detects if any malicious activity happen. HIDS mainly monitors the process activities and ensure security policies of system files, system logs and registry keys. Anomaly detection techniques are useful in intrusion detection systems since an intrusion activity is different from the normal activity of the system. Host based intrusion detection systems run on individual systems which includes the techniques for collecting and analyzing the information on a particular system [3].

HIDS is different from Anti-virus. Anti-virus monitors all the activities inside the system but not sufficient to detect and analyze some system specific attacks like buffer overflow attacks in memory, memory leakage, malfunctioning of operating system process but HIDS collect and analyze system data such as status of file system, system call pattern and system events to detect any anomaly has occurred or not. HIDS system uses audit trail information and system logs to detect malicious activities inside the system. The intrusions can be detected by recognizing the sequence of anomalies in system traces. The malicious programs, malicious behavior and security policy violations collectively form the anomalous subsequences. The normal and anomalous behavior can be identified by analyzing the alphabets in the co-occurrence of events. The alphabet represents the individual system calls and the data will be in sequential form. These calls could be generated by programs or by users. The major advantage of host-based systems is that it can keep track of user specific information. [3], [4].

HIDS can detect an improper use of company resources. If the activity pattern is similar to past attacks, the activity with that company resource can be stopped, thus prevent the attack. Host-based intrusion detection system are designed to monitor, detect, and respond to user system activity and attacks on a given host [3]. Some robust tools offer centralized audit policy management, supply data forensics, statistical analysis and evidentiary support, as well as provide some measure of access control. Host-based intrusion detection is best suited to combat internal threats and abnormal behaviors in the local networks, because of its ability to monitor and respond to specific user actions and file accesses on the host.Anomaly detection refers to the methods of

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A Survey of Intrusion Detection System

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Abstract

Nowadays, the evolution of internet and use of computer systems has resulted in huge electronic transformation of data which experienced multiple problems such security, privacy and confidentiality of information. A significant progress has been made in term of improving computer systems security. However, security, privacy and confidentiality of electronic systems are potentially major problems in computer systems. In this paper, we presented a survey on intrusion detection systems (IDS) in several areas. It consist of Web Application, Cloud Environment, Internet of Things (IoT), Mobile Ad-Hoc Network (MANET), Wireless Sensor Network (WSN) and Voice over Internet Protocol (VOIP).

1. INTRODUCTION

Currently, the evolution of internet and use of computer systems has resulted in huge electronic transformation of data which experienced multiple problems such security, privacy and confidentiality of information. A significant progress has been made in term of improving computer systems security. However, security, privacy and confidentiality of electronic systems are potentially major problems in computer systems. In fact, no system currently available in the world is 100% secure.

A computer network is a set of computers connected together for the purpose of sharing resources. A network attack can be perpetrated by aninsider or by an outsider. In the "inside attack", the attack is initiated by an entity inside the security perimeter, the person who has complete authorization involves in the vulnerable activities, that is, the attacker tries to access some system resources for which he is not having the authorization. It is very tough to find out this type of persons.

An "outside attack" is initiated from the outside, that is by an unauthorized or illegitimate user of the system. In the Internet, the outside attackers may be amateur pranksters or organized criminals or international terrorists or even hostile governments. A computer network consists of two components namely hardware and software. Both of these components may have their own risks and vulnerabilities.

Hardware threats are easy to detect and also it cause harm only to the device rather than the data. The Hardware threats are of four types: Physical, Electrical, Environmental and Maintenance. If the attack is in software, mainly it harms the data. Previously, only the persons with high programming skills were involved in writing of hacking programs. But now, a person who has a little knowledge of programming may become a hacker just by downloading hacking tools from the internet.

Attack scenarios. Basically, if a new signature is found on the database of signatures, then the behavior will be Vulnerabilities in most computer systems. And, it can be exploited by either non authorized or authorized users. Having said that, several tools are being designed and implemented for a variety of exploitations in diverse range of security attacks. Among these tools is the intrusion detection systems (IDS) which allow us to monitor a range of computer systems: an information system, a network or a cloud computing. These IDS detect intrusions and defined as attempts to break the security objectives such as confidentiality, integrity and availability and nonrepudiation. considered as an attack [1, 2].

An attack may be an active or passive attack. In "Active attack", the attacker will undergo some actions which may alter the system resources like breaking or bypassing the secured systems. Mostly it results in revealing sensitive information, modification of data or the maximum, loss of data completely. Trojan horses, viruses, worms, inserting malicious code, penetrating network data, stealing login information are some of the

Intrusion Prevention System: A Survey

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ABSTRACT

For the last few years, the Internet has experienced tremendous growth. Along with the widespread evolution of new emerging services, the quantity and impact of attacks have been continuously increasing. Defence system and network monitoring has become an essential component of computer security to predict and prevent attacks. This article presents a survey, open issues on early detection, and response toward prevention network intrusion. Roadmap of intrusion prevention of current approach is also presented. Furthermore, relevant issues and challenges in this field are subsequently discussed and illustrated. This research is expected to obtain learning phase. Finally, this work concludes with an analysis of the challenges that still remain to be resolved.

Keywords: *Intrusion Detection / Prevention System, Heterogeneous Parameter*

1. INTRODUCTION

Intrusion Detection was developed to identify and report the attack in the late 1990s, as hacker's attacks and network worms began to affect the internet, it detected hostile traffic and sent alerts but did nothing to stop the attacks [1]. It has been a long road for Intrusion Detection System (IDS), almost two decades since it has become a major issue. In other words, Intrusion Detection is passive. It is not able to detect all malicious programmes and activities most of the time and incompatible to integrate with control restriction to stop traffic inbound-outbound from attacking; which means it was only capable to detect attack actions, without prevention action.

Intrusion Prevention System (IPS) is primarily a network-based defence system, with increasing global network connectivity and combines the technique firewall with that of the IDS properly with proactive technique. This system is a proactive technique which prevents attacks before entering the network by examining various data record and detects demeanour pattern recognition sensor. When an attack is identified, intrusion prevention blocks and logs the offending data. Currently, requirement for a system to provide early detection / warning from intrusion security violation with knowledge based has become a necessity. Therefore, the system must be active and smart in classifying and distinguishing packet data, if curious or mischievous data are detected, alert is triggered and event response is executed. This mechanism is activated to terminate or allow packet data to process associated with the event. It prevents attack before entering the network by examining various data records and prevents demeanour of pattern recognition.

Currently, requirement for a system to provide early detection / warning from intrusion security violation with knowledge based has become a necessity. Therefore, the system must be active and smart in classifying and distinguish packet data, if curious or mischievous data are detected, alert is triggered and event response is executed. This mechanism is activated to terminate or allow packet data process associated with the event. It will prevent attack before entering the network by examining various data record and prevent demeanour of pattern recognition.

The main contribution if this paper is the enhancement of the learning phase and part of the research have being done [2],[3]. The remaining of the paper is structured as follows: Section 2 presents related work in roadmap of intrusion detection, early detection, response, and prevention system. Section 3 discussed on issues and challenges in this research. Finally, section 4, summarized our concluded and present additional works to be continued.

Modeling Intrusion Detection System Using Hybrid Intelligent Systems

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Abstract

The process of monitoring the events occurring in a computer system or network and analyzing them for sign of intrusions is known as intrusion detection system (IDS). This paper presents two hybrid approaches for modeling IDS. Decision trees (DT) and support vector machines (SVM) are combined as a hierarchical hybrid intelligent system model (DT–SVM) and an ensemble approach combining the base classifiers. The hybrid intrusion detection model combines the individual base classifiers and other hybrid machine learning paradigms to maximize detection accuracy and minimize computational complexity. Empirical results illustrate that the proposed hybrid systems provide more accurate intrusion detection systems. r 2005 Elsevier Ltd. All rights reserved.

Keywords: Intrusion detection system; Hybrid intelligent system; Decision trees; Support vector machines; Ensemble approach.

1. Introduction

Traditional protection techniques such as user authentication, data encryption, avoiding programming errors and firewalls are used as the first line of defense for computer security. If a password is weak and is compromised, user authentication cannot prevent unauthorized use, firewalls are vulnerable to errors in configuration and suspect to ambiguous or undefined security policies (Summers, 1997). They are generally unable to protect against malicious mobile code, insider attacks and unsecured modems. Programming errors cannot be avoided as the complexity of the system and application software is evolving rapidly leaving behind some exploitable weaknesses. Consequently, computer systems are likely to remain unsecured for the foreseeable future. Therefore, intrusion detection is required as an additional wall for protecting systems despite the prevention techniques. Intrusion detection is useful not only in detecting successful intrusions, but also in monitoring attempts to break security, which provides important information for timely countermeasures (Heady et al., 1990; Sundaram, 1996). Intrusion detection is classified into two types: misuse intrusion detection and anomaly intrusion detection.

Misuse intrusion detection uses well-defined patterns of the attack that exploit weaknesses in system and application software to identify the intrusions (Kumar and Spafford, 1995). These patterns are encoded in advance and used to match against user

A Survey On Cloud Computing

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Abstract- The long-dreamed vision of "computing as a utility" has finally taken shape in the form of cloud computing. This paradigm shift is the biggest buzz in today's computer world. It can be thought of an evolution of existing technologies rather than a revolution. The basic requirements of cloud are to meet the various needs of enterprise organizations such as scalability, adaptability, extensibility and manageability. The biggest visible change the cloud computing has made in the scenario of computing is moving the data center offsite to a third party and buying services rather than maintaining onsite applications directly. By its use companies can save money on operational costs and they can focus on their core business instead of being worried about different IT obstacles. Moreover true portability is provided by cloud by enabling access to applications and documents anywhere in the world via the internet through commodity hardware only. In this paper we have described the basic concepts of cloud computing in a nutshell so that the readers can get an essence of this newly emerging technology.

Keywords - Cloud Computing, Data Lock-in, Green IT, Grid Computing, Utility Computing, Virtualization.

1. INTRODUCTION

The journey to the cloud marks a momentous evolution in IT industry. It is changing the way we all work and manage our systems regardless of industry or size. One of the formal definitions of cloud computing as given by NIST is [1] - *"Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction. This cloud model is composed of five essential characteristics, three service models and four deployment models."*

So cloud computing is a way for small organization to compete with much larger ones, it's a way to save a lot of money and to utilize energy efficiently. The users only have to worry about their bandwidth connection and the rest will be taken care of by the cloud provider for which the users will pay a nominal amount according to their usage.

The paper proceeds as follows: In the second section we have given a brief history of cloud computing. Section three describes the cloud components, its characteristics, service models and deployment models. Benefits of cloud are discussed in section four which is followed by the obstacles in cloud. Finally the last section concludes the topic.

2. EVOLUTION of Cloud Computing

The concept of cloud computing is not new. The idea was first suggested by John Mc Carthy in 1960s when he proposed the concept of "Utility Computing" [2]. Like, utility computing, at its most basic level, cloud treats computing as a utility rather than a specific product or technology. The former is defined as a packaging of computing resources such as computation, storage and devices as a metered service like other normal household services such as water, electricity, gas and telephone[2]. The model has the advantage of having low initial cost because computational resources are essentially rented on demand basis, thereby avoiding under-utilization and/or over-utilization of resources.

Cloud computing evolves gradually after grid computing. Cloud computing is also defined as the user-friendly version of grid computing [4]. One of the popular definitions for Grids is [3] *"A Grid is a type of parallel and distributed system that enables the sharing, selection, and aggregation of geographically distributed 'autonomous' resources dynamically at runtime depending on their availability, capability, performance, cost, and users' quality-of-service requirements."*

The motivation behind grid computing was to solve large-scale, resource-intensive applications that require more resources than a single PC [3]. At a glance, cloud may be confused with grid còmputing. The distinctions are not clear maybe because Clouds and grids share similar visions: reduce computing costs and increase flexibility and reliability by using third-party operated hardware [5]. In grid computing, a large project is divided among multiple computers to make use of their resources. Cloud computing does just the opposite. It allows multiple smaller applications to run at the same time. Clouds are more popular than grids due to its user-friendly, virtualized and automatically scalable utilities. Pay-as-you-go model makes cloud more attractive as compare to the fixed payment scale of grid [5]. Unlike Grids, scalability of Cloud resources allows real-time provisioning of resources to meet application requirements as opposed to the traditional

A Study on Selection of Data Center Locations

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ABSTRACT: Cloud computing has been a topic of discussion, research, study, analysis for the last decade. And in the coming years it will gain more importance and more of its new aspects will be explored. The services of cloud computing has been provided via different Data Centers. The Cloud Service Providers build their own data centers and provide different types of services. This paper focuses on one of the key issues and a challenge that is an integral part of data centers. The question is what is a suitable location for building data centers?

KEYWORDS: Cloud Service Provider (CSP), Data Center (DC), Green Cloud Computing, Quality-of-Services (QoS).

I. INTRODUCTION

The new era of computation has been associated with the field of cloud computing. It has become a blessing for many. Individuals, educational institutes, research organization, enterprises, large industries become dependent on it. The huge cost of buying, installing and maintaining hardware and software components has shifted to Cloud Service Providers (CSP). CSPs use data centers (DC) to provide different types of services, e.g. Software-as-a-service (SaaS), Platform-as-a-Service (PaaS) and Infrastructure-as-a-Service (IaaS) over the internet. Now, one of the major concerns of CSP's is regarding appropriate geographical location of Data Centers. Before planning about what services will be provided and how?, the first and foremost thing to think is what location on earth would be suitable to build a DC. Several issues need to be considered when selecting a location for building DC. The following sections highlights on these issues.

II. KEY ISSUES AND THE CHALLENGES

To find a best possible geographical location to build DC is not an easy task. Before going into the details of these issues, we would like to categorize the types of issues (see fig. 1).

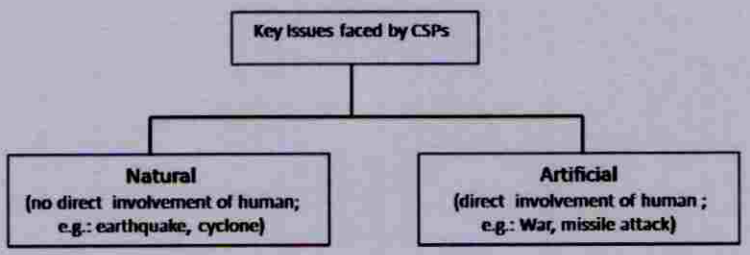

Fig. 1. Classification of key issues in building DC

In the following section these issues are elaborated.

1. **Climate/Weather of Geographical Areas:** One of the major issues regarding the location of DC is the overall condition of climate/weather of a geographic location. Around the globe, we can find areas with different types of climate conditions, that if taken into considerations, play a significant role in the selection of DC location. The CSPs can accumulate all these information from respective country's/province's government, regional meteorological department etc. For example,

    a) Areas where the weather condition is too hot (e.g., desert) is never a suitable location for building a DC. Because that will have an adverse effect on DC. Since the CSPs already need to spend significant amount of

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ANNIDS: Artificial Neural Network based Intrusion Detection System for Internet of Things

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Abstract*: Internet of Things (IoT) makes everything in the real world to get connected. The resource constrained characteristics and the different types of technology and protocols tend to the IoT be more vulnerable than the conventional networks. Intrusion Detection System (IDS) is a tool which monitors analyzes and detects the abnormalities in the network activities. Machine Learning techniques are implemented with the Intrusion detection systems to enhance the performance of IDS. Various studies on IoT reveals that Artificial Neural Network (ANN) provides better accuracy and detection rate than other approaches. In this paper, an Artificial Neural Network based IDS (ANNIDS) technique based on Multilayer Perceptron (MLP) is proposed to detect the attacks initiated by the Destination Oriented Direct Acyclic Graph Information Solicitation (DIS) attack and Version attack in IoT environment. Contiki O.S/Cooja Simulator 3.0 is used for the IoT simulation.

Keywords: Artificial Neural Network, IDS, IoT, Multilayer Perceptron

I. INTRODUCTION

The Internet of Things (IoT) paves way to connect large volume of real world objects to the global network. These objects communicate with other objects using their unique identifiers to perform certain tasks and for data transmission. The Low power and Lossy Networks (LLN) are deployed in large-scale to meet the high demand of this technology. Different technologies, protocols and standards used in IoT and the tremendous growth of IoT devices in the global network bring additional vulnerabilities to the IoT networks

[1]. On account of the resource constrained characteristics of the IoT nodes, the conventional authentication and cryptography security mechanisms are not desirable to the IoT networks. Hence, it is mandatory to provide additional security mechanism like IDS to protect the IoT network from security threats and vulnerabilities [2].

IDS can be software/hardware or the combination of both which is used to investigate the malicious traffic in the network or a particular node. If there is any attack, the IDS monitors, detects and alerts the administrator and logs the attacks for analysis [3]. Intrusion Detection System automates the process of monitoring and detecting and alerting the administrators to take necessary actions to prevent the destructive impacts of the attacks [4].

According to Jyothi et al., physical attacks are initiated on the hardware of the system, network attacks are performed on IoT network elements and Software attacks are performed by using software like malware, virus, spyware and worms [5]. Based on the security vulnerabilities targeting on network resources, network topology and network traffic Anthea et al., proposed the taxonomy of RPL attacks. Because of the fake control messages and building of loops in the Destination Oriented Direct Acyclic Graphs (DODAGs), the attacks reduce the lifetime of the RPL network [6].

DIS (DODAG Information Solicitation) attack and Version attacks are the two RPL attacks considered in this work. To get the topology related information, a new node sends DIS message to its neighbors before it becomes the member of the network. In DIS attack, the malicious node resets the DIO timer frequently and sends DIS messages to the nodes within one-hop distance. This reduces the throughput and leads the energy of the nodes also to be exhausted. The DIS attacker sends unicast, broadcast or multicast DIS messages to its neighbors. Thus, it increases the control overhead in the network traffic.

Each DODAG tree has its own version number. It will be reconstructed when a new version number greater than the current one is published. Version number attack will occur by reconstructing the DODAG tree frequently using higher version. The nodes start

Enhancing The Machining Performance Of Hss Drill In The Drilling Of Gfrp Composite By Reducing Tool Wear Through Wear Mechanism Mapping

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ABSTRACT

The wear characteristics of cutting tools is affected by the machining factors such as the magnitude of the cutting speed, extent of the cutting tool movements in the feed direction, the geometry of the cutting tool etc. This research paper presents some original research into the wear types, as well as the phenomena that occurs in the cutting tool/work material interface zone and their relationships to cause different wear mechanisms (adhesion, abrasion and diffusion) in hole machining process. A wear mechanism map involving the tool wear characteristics of uncoated High Speed Steel (HSS) drill of 6mm diameter is constructed for the drilling of Glass Fiber Reinforced Polyester (GFRP) composite laminates. Different wear modes observed and identified by the surface micrograph image of land / flank of uncoated HSS drillsto describe a number of wear mechanisms. The dominant wear mechanisms include adhesive wear, adhesive and abrasive wear, abrasive wear and fatigue / thermal wear. In the wear mechanism map, a wear region was identified, which is called "safety cutting zone" or "mild wear zone", where the minimum flank wear of the HSS drill tool occurs. In order to carry out the drilling operation on the GFRP composite in the "safety cutting zone" or "mild wear zone", it was found that the spindle speed should be set in the range of 1200-1590 rpm and feed rate must be set to 0.10 – 0.16 mm/rev. Thus, the wear mechanism map constructed here can be used as a reference for selecting suitable drilling parameters of uncoated HSS drill tools for GFRP composites.

Key words: GFRP composites, drilling, wear mechanism map, wear mechanism, HSS drill, safety cutting zone

1. INTRODUCTION

Machining using the cutting tool is the collective process of friction and wear at the tool work interface zone. During machining, the cutting tool undergoes tool wear that reduces the life of the cutting tool, reduces the productivity but increases the surface roughness of the machined work pieces. In recent days, Polymer Matrix Composites have found wide range of applications starting from household appliances up to the extent of automobile and aircraft components. Drilling is one of the most essential machining operation used for polymer matrix composites in assembly operation using fasteners [1-3]. Because of the discovery of more effective and efficient automobile/aircraft components and their corresponding materials, along the addition of modern CNC machines for machining, the manufacturer's prerequisite is to increase the life of cutting tools during the machining process in order to increase the machining efficiency and to lower the manufacturing/production cost. However, the study on the wear rates and wear mechanisms of cutting tools in drilling of polymer matrix composites are very limited and are still not enough to meet the industrial requirements of manufacturing and machining [2]. Therefore the wear rate map and wear transition / mechanism map pertaining to a specific cutting tool / work piece pair becomes prominent for selecting the appropriate machining parameters since the whole wear rate map and wear mechanism maps areplotted under various machining process conditions and machining parameters.

In later 80's, Lim and Ashby constructed the first wear mechanism map in the tribology field [4,5], which combined theoretical and practical works together. In the early 90's, a wear mechanism map of aluminum alloys was constructed by Liu [6,7]. After systematic studies on the wear process of cutting tools, Lim, Liu and coworkers constructed few wear maps of tools cutting steels, which used feed rates and cutting speeds as two axis respectively [8,9,10]. These maps explained the tribological characteristics of HSS tool while machining steels and relative wear mechanisms in different regions under dry running conditions.

Drilling is an important machining of the polymer composite material, so the wear mechanism map of drilled tools was studied in this paper. Also, in this research, the wear mechanism map of uncoated HSS tools during dry-drilling of the polymer composite material is constructed, and the safety zone is identified in which the wear rate of tools would be minimum [15]. It is also possible to use the wear mechanism maps for other form of machining, to predict the general trend of tool wear, such as the approximate location of the lower-wear regions [11].

These maps will also be treated as good references for choosing suitable processing parameters for uncoated HSS tools drilling of GFRP composites. These maps describe the tribological features of HSS tool drilling GFRP composite and relative wear mechanisms in different regions under dry machining conditions [15]. In this research the wear mechanism map of uncoated HSS tools drilling GFRP composite laminates is constructed by considering drilling process parameters at different

Modification of exhaust muffler of a diesel engine based on finite element method acoustic analysis

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Abstract

In order to improve the acoustic attenuation performance of an exhaust muffler of a 175 series of agricultural diesel engine, automatic matched layer method of finite element is adopted on the basis of LMS Virtual.Lab software to simulate the non-reflecting boundary conditions, which can avoid the complex calculation and then figure out the value of propagated sound power directly and finally obtain the transmission loss of the exhaust muffler. Compared with the experimental data, it can be found that the error between the simulation and measured values is small, and it can be accurately simulated for the acoustic performance of the exhaust muffler at the frequencies smaller than 3000 Hz, which verifies the validity of the acoustic solution. An improved design that properly distributes the insertion length of intubation, increases the length–diameter ratio, and adds the length of the first expansion cavity is proposed for the poor acoustic attenuation performance in low and medium frequencies. Compared with the original design, the transmission loss value at low and medium frequencies obviously increases, so the acoustic attenuation performance at the frequencies becomes better.

Keywords

Diesel engine, exhaust muffler, transmission loss, acoustic simulation

I. INTRODUCTION

Along with the rising motor vehicle population, the noise pollution becomes serious and exhaust noise has become the main noise source of an engine, so the acoustic attenuation performance of an exhaust muffler which has been adopted as the most effective method in dealing with exhaust noise seems particularly impor-tant.[1,2] At present, the main research methods for mea-suring the acoustic performance of the exhaust muffler include transfer matrix method, finite element method, and boundary element method,[3] while the finite ele-ment method has become the commonly used three-dimensional analysis method because of its good adapt-ability.[4] Finite element method can simulate various types of mufflers, especially suitable for solving the muffler that has complex shape and cross-sectional structure; meanwhile, the acoustic precision is higher at low and medium frequencies.[5-7] Since Clough et al. proposed the finite element technology that had achieved rapid development in the engineering field for the first time, many experts, both domestic and abroad, have been doing research on it intensively. Craggs[8] first

attempted to analyze the muffling characteristics of noise elimination unit based on the finite element method which laid a consolidating foundation for the finite element method applied in the field of acoustic. Young and Crocker[9,10] adopted the finite element two-dimensional analysis method in the calculation of the muffler's transmission loss (TL) for the first time, which promoted the further study of finite element method applied in the muffler. Ross[11] used finite ele-ment method to analyze the muffler's muffling charac-teristics which contained perforated structure. Mechel[12] described the finite element method applied in the dif-ferent structural muffler's acoustics research in his monograph. Rong and Zhengshi[13]and Jing[14] utilized the acoustic finite element method, took complex muf-fler as the research object, and focused on its acoustic characteristics analysis method. Guanxin[15] explored the way of combining the use of transfer matrix method and finite element method and provided reli-able theoretical method for the muffler's optimization design. Qihui[16] considered the air temperature as an influencing factor and used the finite element method to calculate the practical muffler's TL. Lei[17] calculated different types of perforated pipe muffler's TL based on the finite element method as well as studied various factors affecting the acoustic performance of perforated pipe frame of the muffler.

In this article, in order to improve the acoustic attenuation performance of the exhaust muffler of a 175 series of agricultural diesel engine, automatic matched layer (AML) method of finite element is adopted on the basis of LMS Virtual.Lab software to simulate the non-reflecting boundary conditions, which can avoid the complex calculation and then figure out the value of propagated sound power directly and finally obtain the TL of the exhaust muffler. Compared

A Review on Effect of Vibration Welding of Different Materials in Various Welding Processes

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Abstract **- This paper deals with the effect of vibratory welding technique in various welding process like TIG welding, shield metal arc welding (SMAW), friction stir welding, ultrasonic welding. It also involves in using this vibratory welding technique in joining different materials like dissimilar metals, joining composites and in joining plastics. In vibratory welding, work piece vibrates in the whole welding process and it mainly effects the welding solidification to improve the quality. Vibration facilitates the release of dissolved gases and the resulting weld beads greatly exhibit reduced porosity. There exists residual stress near the bead because of locally given heat. These residual stresses decrease the fatigue life of the joint. The vibration technique has been used to avoid these residual stresses. The increase in mechanical properties is attributed to, as the weld pool solidifies, grains are not only limited in size but also dendrites are broken before they grow large in size. The above mechanism is responsible for the improvement in hardness of weld bead and in the heat affected zone (HAZ) with vibratory welding technique compared to without vibration during welding. Lot of research work has been done in describing the benefits of vibration during welding in various welding processes, joining of composites, dissimilar metals, plastics and enhancement of material properties of weld joints. In this paper, these effects are reviewed and discussed to provide a better understanding of the processes Understanding of these processes and application of the procedures offer extensive scope for significant cost savings in design and fabrication of welded products.**

Keywords: ***effect of vibration weld in various process, micro hardness, mechanical properties, process parameters, residual stress, vibration weld microstructure.***

I. INTRODUCTION

Welding is a manufacturing technique widely used in industry for fabricating products with complex shapes in very simple processing runs. Mechanical vibration has been used to improve microstructure and mechanical properties of weldments by way of grain refinement and this practice has been used by researchers. In the case of welding under vibratory conditions, work pieces are held rigidly on a vibratory table and the table is rigidly coupled to the vibration exciter which generates vibrations at different frequencies of oscillation and transmits them to the table and work pieces which in turn vibrate at different frequencies of oscillation. The molten metal solidifies under these vibratory conditions. Fluidity is one of the most important factors in welding processes. It is defined variously as the distance covered by quality liquid metal in a channel of fixed geometry before solidifying. That is the ability of a melt to flow and fill very narrow spaces, in a gap between welding grooves [1].From the available literature, it has been demonstrated these sonic or ultrasonic vibrations of mechanical origin can be effective in increasing fluidity by as much as a factor of three. A number of examples can be found in the literature where external forces have been applied to induce fluid flow during solidification in order to refine grain size hence improve mechanical properties. These methods include rotation of the work pieces, mechanical vibration and electromagnetic stirring.

Influence Of Vibrations In Welding Process To Enhance Mechanical Properties: A Review

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Abstract:

Welding is a technique in which two or more metal or non-metals can be joined together with or without application of heat, with or without application of pressure, with or without application of filler material. But because of residual stresses and distortions the mechanical properties of the joint is effecting, to reduce these distortions and residual stress post weld heat treatment process were introduced, with that the mechanical properties of the joint is improved. Heat treatment and mechanical processing are the most commonly used stress relieving techniques, but these are both costly and time consuming and also involve a lot of hard work. So, there is a dire need for alternate methods to be employed to relieve stresses from the welded joints. Here, a new concept of avoiding the stresses rather than relieving them after the weld bead has cooled. One of the attempts to such methods is to induce vibrations into the welding through mechanically vibrating the weld pool by vibrating the work pieces. In this present research article, effect of introducing vibrations during welding process to the weld pool has been studied and concentrated to understand the main role of vibration in enhancing the mechanical properties and microstructure of the weld pool.

Keywords: Vibrations, residual stress, weld pool refinement, Micro structure.

I. INTRODUCTION

Welding process is largely applied in most of the fabrication areas they are very much crucial in engineering fields like ship building, structural constructions, automotive, aerospace etc.,[1] In welding, a joint can be performed with lesser weight than the bolted or riveted joint. Welding parameters in welding decides quality of the weld and the life span of that weld joint. The parameters like welding current, electrode size, arc length, welding current, welding voltage and weld travel speed have lot of effect on weld bead quality. As we know that each process will have its pros and cons, besides being widely used and effective joints, welding has a large heat affected zone. Due to the concentration of large amount of heat over a small area, there will be generation of residual stresses in the joints. As residual stresses being a major problem during welding, much research work happening in this particular area.

Mechanical Properties of weldments are highly influenced by grain size and microstructure. When compared with coarse grained structure of materials fine grained structure of materials generally have high ductile and higher strength [2],[3]. To achieve fine grained structure different mechanisms are there some of those weld pool oscillation, welding torch vibrations and work piece vibrations [4],[5],[6]. Vibrations modify the solidification process of weld pool during welding which gives fine grained structures. Vibratory techniques are introduced from so many decades to enhance the welded joints solidification behavior. The different vibratory welding setups are introduced by various researchers to reduce residual stresses and to improve the mechanical properties of weldments. The schematic representation of vibratory weld setup is shown in figure 1.

Performance Evaluation of an Existing RC Building Using SAP

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Abstract:

Earthquakes are very common in every part of the wo rld. Geographical statics of India show that almost 54% of the land is vulnerable to earthquakes. Due to these earthquakes large destruction is caused to the infrastructure and the buildings. The buildings, which appeared to be strong enough, may cru mble like houses of cards during earthquake and deficiencies may be exposed. Experience gained fro m the recent earthquake of Indonesia, 2013 demonstrates that the most of build ings collapsed were found deficient to meet out the requirements of the present day codes. It has raised the questions about the adequacy of framed structures to resist strong motions, since many buildings suffered great damage or co llapsed. Pushover analysis is a method t o evaluate the performance o f a building under earthquakes. In the proposed study a four-story residential existing rein forced concrete building in the city of Port Blair, Andaman and Nicobar Islands, subjected to seismic hazard, was analyzed. Plastic hinge is used to represent the failure mode in the beams and colu mns when the member y ields. The pushover analysis was performed on the building using SAP2000 ver.14 software both in X and Y d irection. The equivalent lateral force (ELF) procedure is used to compute design forces and distributed over the height of the structure. The main object ive of the study reported in this paper is to check the performance level of the reinforced concrete structures during the seismic events.

Keywords: Pushover analysis, Reinforced concrete structures, Seismic performance, Unsymmetrical structures, soft storey .

1. INTRODUCTION

1.1 General

A large number of existing build ings in India are severely deficient against earthquake forces and the number of such buildings is growing very rap idly. Th is has been highlighted in the history of earthquake. So it has become very important to assess the performance level of an existing building under seismic loads and if it's not safe further retrofit of the existing build ing to meet up the recent performance levels. The behaviour of the buildings during earthquake depends not only on the size of the members and amount of reinforcement, but to a great extent on the placing and detailing of the reinforcement. There are three sources of deficiencies in a building, which have to be accounted for by the retrofitting engineer:

(i) Inadequate design and detailing

(ii) Degradation of material with time and use

(iii) Damage due to earthquake or other catastrophe

The purpose of pushover analysis is to evaluate the expected performance of structural systems by estimat ing its strength and deformat ion demands in design earthquakes means of static inelastic analysis, and co mparing these demands to available capacities at the performance levels of interest. The equivalent static lateral loads approximately represent earthquake induced forces. A plot of the total base shear versus top displacement in a structure is obtained by this analysis that would indicate any premature failure or weakness. The paper deals with non -linear analysis of unsymmetrical structures constructed on plain ground subjected to various kinds of loads. The analysis has been carried out using SAP2000 ver. 14 software . A Pushover Analysis has been carried out of a 4 Storey's Reinforced Concrete Build ing aiming to evaluate the zone-V selected.
reinforced concrete building to conduct non -linear static analysis (pushover analysis) using SAP 2000.The study showed that hinges have developed in the beams and columns showing the three stages immediate occupancy, life safety and collapse prevention. Utilizing the results from the analysis, some modifications were made to the original code-based design so that the design objective of Life Safety performance is expected to be ach ieved under design earthqua.

1.2 Seismic Design

RC frame building would beco me massive if they were to be designed to behave elastically without incurring damage, and hence the project may become economically unviable . On the contrary, the building must undergo damage necessarily to be able to dissipate the energy input to it during the earthquake. Thus, as per the seis mic design philosophy, (a) under occasional strong shaking, structural damage is acceptable. Therefore, structures are designed to damage, but collapse is not, and (b) under

Wax Additives In Warm-Mix Asphalt Binders And Performance In The Multi-Stress Creep And Recovery Test (MSCR)

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ABSTRACT

Addition of select waxes (Fischer-Tropsch and Fatty Acid Amides) to asphalt is an accepted practice in warm-mix asphalt production. Additionally Fischer-Tropsch, Montan wax and Montan wax blends have been used in Europe for several years as compaction aids for bituminous mixtures. Addition of waxes to binders prompts concern as to detrimental effects they may have on asphalt binder performance, especially fatigue and low temperature performance. In this study one base asphalt and nine wax additives, for possible use in warm-mix asphalt binders, were used to evaluate the effect of wax additives on asphalt binder properties and a limited evaluation of mix performance.

Binder performance grade testing revealed considerable differences exist in the different products evaluated. Most of the products reduced the low temperature grade by a few degrees. The G mixture mastercurves for the Control binder and Montan wax exhibited the highest moduli at high frequencies and the Sasobit mix exhibited the lowest modulus of all mixes.*

All the wax products evaluated can be classified as non-elastic materials when tested in accordance with the multi-stress creep and recovery test (MSCR). This finding contradicts linear visco-elastic behavior at small strains levels which is suggestive of elastic network formation. It can be concluded for the wax type additives that the repetitive creep test must be conducted with an evaluation of Jnr rather that reliance of 1/J" (G/sin delta) as per the current Superpave specifications.*

Keywords: Wax additives, rheology, Jnr, stress sensitivity, non-linear behavior

1. INTRODUCTION

Wax-like additives which melt in a temperature range between the highest pavement temperature and the desired compaction temperature have been used as an asphalt additive for warm mix and asphalt compaction aide applications (Brule et al., 1990). Waxes have long been viewed as a problematic component within an asphalt binder, largely due to their negative impact on bitumen temperature susceptibility. With this in consideration, the primary concern in this study was how addition of wax to asphalt to reduce construction temperatures can be beneficial with respect to overall binder performance. More importantly, can current specifications distinguish between beneficial additives versus those that might have a negative impact on the performance of hot mix asphalt (HMA).

Typical waxes melt within the pavement service temperature range. When even a small fraction of the asphalt undergoes a phase change from solid to liquid over a short temperature range, the Shell bitumen test data charts exhibit a unique behavior as defined by "W" type asphalts. With added wax, the resulting binder is both harder at low pavement temperatures and softer at high pavement temperatures. Both of these characteristics are considered as detrimental performance characteristics. When hot candle-wax is poured on a surface, it quickly solidifies to a soft, pliable mass. Over time it crystallizes into to a hard, non-ductile chip which occupies significantly less volume. This volume change also causes the well- known indention of the candle wax around the wick as the ductile amorphous wax continues to crystallize.

More recent asphalt research studies suggest that waxes also exist in bitumen as two different physical states corresponding to amorphous and microcrystalline wax. As pavements cool to low temperatures, the solid-solid phase transition between the two states is accompanied by a significant decrease in volume, which yields a corresponding increase in binder density. This phenomenon, called reversible physical hardening (RPH), was first identified by Bahia and Anderson during Strategic Highway Research Program (SHRP) studies of the Bending Beam Rheometer (Anderson et al., 1994). They noted continuous stiffening of certain asphalt beams as they were held at -15°C for up to four days. Dilatometric studies confirmed that an increase in stiffness was directly correlated to an increase in density under the corresponding storage conditions. Brule et al. (1990) used analytical tools such as Differential Scanning Calorimetry (DSC), Phase Contrast Microscopy, Polarized Light Microscopy, Dilatometric measurements, Nuclear

COMPRESSIVE STRENGTH OF CONCRETE USING NATURAL AGGREGATES (GRAVEL) AND CRUSHED ROCK AGGREGATES-A COMPARATIVE CASE STUDY

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ABSTRACT

Coarse Aggregates are the main component of concrete and occupy around 45% of the total volume of concrete. Their Properties have a profound effect on the various properties of concrete when wet as well as after hardening. There are many sources in Kashmirwhich have abundant supply of natural aggregates (gravel) cheaply available than machine (jaw crushers) crushed rock aggregates. In our work a comparison of the various properties of concrete made from machinecrushed rock aggregates and natural aggregates (gravel)was done. Need was felt for this study as the major private constructions (some Government constructions) that are carried out in most of Srinagar, Bandipora and Ganderbal districts use natural aggregates procured from nearby Nallas and rivers flowing through Ganderbal District of Jammu and Kashmir. In this study the common practices adopted while making of concrete here in Kashmir were simulated.

The properties compared include workability, strength and permeability. In this paper the compressive strength of the two types of concrete are compared. The compressive strength was found after 28 days on 15cmx15cm cubes as per the guidelines of is 456 2000 and the workability was measured by slump test. The strength was compared for a particular value of workability as in many construction works water is added to concrete till a workable concrete is produced.The workability of the wet concrete was found during mixing and water was added gradually to result in required workability.Two grades of concrete were made M15and M20 from nominal mix ratios of 1:2:4 and 1:1.5:3 respectively.The cement used was 43 grade (locally available brand), sand (Zone-IV), natural andcrushed rock aggregates were procured from east Kashmir (District Ganderbal). Two sizes of coarse aggregates were used 20mm-10mm (60%) and 10mm-4.76mm (40%).It was observed that for the same workability concrete made by using natural aggregate has higher strength as compared to concrete made by using crushed rock aggregates. Workability was kept same as in ordinary constructions in Kashmir.

Keywords: Compressive strength of Concrete, Workability, Natural aggregates, Crushed Aggregates, Aggregates from Kashmir.

INTRODUCTION

Concrete is one of the most Annual global production of concrete is about 5 billion cubic yards. (Source: Cement Association of Canada) Twice as much concrete is used in construction around the world than the total of all other building materials, including wood, steel, plastic and aluminium. (Source: Cement Association of Canada)Concrete is a composite of cement sand, aggregates. Aggregate is granular material such as sand, gravel, crushed stone, blast-furnace slag, and lightweight aggregates that usually occupies approximately three-fourth of the volume of concrete. Aggregate properties significantly affect the workability of plastic concrete and also the durability, strength, thermal properties, and density of hardened concrete. The importance of using the right type and quality of aggregates cannot be overemphasized. The fine and coarse aggregates generally occupy 60% to 75% of the concrete volume (70% to 85% by mass) and strongly influence the concrete's freshly mixed and hardened properties, mixture proportions, and economy. Without the study of the aggregate in depth and range, the study of the concrete is incomplete.

Cement is the only factory made standard component in concrete. Other ingredients, namely, water and aggregates are natural materials and can vary to any extent in many of their properties. The depth and range of studies that are required to be made in respect of aggregates to understand their widely varying effects and influence on the properties of concrete cannot be underrated. Aggregates are classified into fine and coarse aggregates. Fine aggregates generally consist of natural sand or crushed stone with most particles smaller than 4.76 mm .Coarse aggregates, that are used in general construction, consist of one or a combination of particles generally having size between 4.76mm and 20mm. Coarse aggregates can be – natural (gravel), or machine crushed rock aggregate. Natural gravel and sand are usually dug or dredged from a pit, river, lake, or seabed. Crushed stone is produced by crushing quarry rock, boulders, cobbles, or large-size gravel. Close to half of the coarse aggregates used in Portland cement concrete are gravels; most of the remainder are crushed stones.

MECHANICAL CHARACTERISTICS OF NORMAL CONCRETE PARTIALLY REPLACED WITH CRUSHED CLAY BRICKS

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ABSTRACT

The quantities of clay bricks in our nation have been on the increase significantly (approx. 45.9tonnes annually in Nairobi) without consideration for potential reuse or recycling increasing the risk to public health due to the scarcity of waste landfill. This growing problem can be alleviated if new disposal options other than landfill can be found. However, increased construction activity and continuous dependence on conventional materials of concrete are also leading to scarcity of the construction material resulting to increased construction cost. This study aims at replacing the past research work on the use of clay bricks aggregate as possible partial substitute for conventional coarse aggregate in concrete. Moreover, from the study, an optimum mechanical strength property of crushedclay bricks in concrete was identified.

Crushed clay bricks originate mostly from broken and over-burnt bricks. There were considered as partial substitute for coarse aggregate in concrete for this study. The replacement proportions were varied from 0%, 20%, 40%, 60%, 80%, and 100% by weight for natural aggregates.A detailed analysis of the results of previous work done by various researchers are presented. Testsresults of this work are of importance in assessing the mechanical properties determined through splitting tensile tests, flexural tests, compressive tests and pull out force tests at 7 and 28 days.

The study indicates that considerable knowledge has been accumulated on the use of waste ceramic products, but more study needs to be done on effects of shapes and sizes of these aggregates

on physical and mechanical properties of the new concrete with aggregates partially replaced with crushedclay bricks. This may lead to better and more efficient recycling and utilization of waste clay bricks in our environment.

Key Words: clay bricks, concrete, aggregates, replacement, recycling, mechanical strength

1. INTRODUCTION

Cement and aggregate, which are the most important constituents used in concrete production, are the vital materials needed for the construction industry. This inevitably has led to a continuous and increasing demand of natural materials used for their production. Parallel to the need for the utilization of the natural resources emerges a growing concern for protecting the environment and a need to preserve natural resources, such as aggregate, by using alternative materials that are either recycled or discarded as a waste.

Construction industry as the end user of almost all the bricks materials, is well poised to solve this environmental problem which is partly its own. The use of waste products in concrete not only economical but also solves some of the disposal issues. Crushed ceramic aggregate can be used to produce lightweight concrete, without affecting strength (Kanaka and Raja, 1992).

The high consumption of raw materials by construction sector, results in chronic shortage of building materials and the associated environmental damage. In the last decade, the construction industry has seen various researches conducted on the utilization of waste products in concrete in order to reduce the utilization of natural resources. Veera Reddy (2010) concluded that replacement of coarse aggregate by ceramic scrap in excess of 20%, leads to reduction of strength below normal concrete mix.

Lopez et al., (2007), observed that this substitution process would increase slightly the compressive strength, nevertheless, researches carried out so far by reusing clay bricks in concrete are scarce and have not fully evaluated mechanical properties of the new concrete, which are key issues. This therefore forms part of a study area that needs to be fully looked into. Above studies, shows that there is a strong need to use crushed clay bricks materials in concrete in an environmental friendly way, (Lopez et al., 2007).

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3D Concrete Printing: Machine and Mix Design

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ABSTRACT

3D concrete printing is an innovative construction method that promises to be highly advantageous in the construction field in terms of optimizing construction time, cost, design flexibility, error reduction, and environmental aspects. Concrete is extruded through a nozzle to build structural components layer-by-layer without the use of formwork or any subsequent vibration. The contribution of this study is to identify and resolve the various design and operational constraints of 3D concrete printing, which are of vital importance for future development of this construction technique. This paper broaches the topic in two different phases: designing the printing machine on one hand, and designing the concrete mix to be used on the other. Experimental results are presented concerning the mix design and the tests performed to determine the fresh and hardened concrete properties. Due to the scarcity of published studies on concrete properties used in 3D printing, the results might be invaluable to the future of this technology. The study may lend itself to become the blueprint for future bigger-scale projects such as creating whole buildings using 3D concrete printers.

Keywords: Buildabilty, Concrete, Contour Crafting, Flowability, Open Time, 3D Printing

1. INTRODUCTION

3D Concrete printing is a construction method that has the capability of fabricating a predesigned building element in 2D layers on top of each other, the repetition of which completes a 3D model. The concrete, which is poured out of a printing nozzle, doesn't need any formwork or subsequent vibration. Contour Crafting (CC) is one method of concrete printing that shows great potential in improving construction techniques and methodologies. CC constructs objects layer by layer using robotics; it is used for small-scale industrial parts and also was identified as the only method capable of delivering components large enough for building structures [1].

Several companies have been experimenting with different methods and technologies of 3D printing. The Chinese company, WinSun, has recently demonstrated its knowledge in 3D printing after printing 10 houses in under 24 hours, with each house costing a mere $5000 [2].Universe

Architecture have created the largest 3D printer in the world that uses sand and a chemical binding agent to create a stone-like material. 3D Concrete printing aims at enhancing construction on several levels: it minimizes the duration of the construction process by eliminating some time-consuming processes in the traditional method [3], it reduces costs incurred on the project by minimizing waste and overproduction in addition to minimizing the use of labor [4], it provides flexibility in building structural shapes that aren't possible to build conventionally, and delivers an improvement in the overall safety and environmental impact of the structure [5].

This paper focuses on the materials aspect through developing the concrete mix for use in this technology. Several tests were conducted to find the optimal concrete mix for this function. It also studies the printing mechanism of the 3D machine and proposes a suitable design for the printer. A structural specimen is printed as a proof of concept for the printing technique.The outcomes of this research and its applications to real-life construction practices target the need for improved automation in civil engineering projects, the need for efficiency in resource management and a rapid and less expensive construction method.

2. METHODOLOGY

2.1 Materials: Mix Design

The concrete mix must be designed to meet certain vital criteria that have a direct relationship with the methodology of printing the concrete. Thus, it is critical to ensure a complementary connection between the designs of the mix and printing machine. In order to design the optimal mix, certain target goals were set for the mix. Table 1presents these goals.

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Literature Work Study Of Precast Concrete Connections In Seismic

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ABSTRACT

Precast concrete structure refers to the combination of precast concrete elements and the structure is able to sustain vertical and horizontal loads or even dynamic loads. So the design and construction of the joints and connections is important to ensure the stability and robustness of the overall structure.

Structures made in Precast concrete is increasing in India. The special interest of developing any connections is to be done using commonly used construction materials, such as cast-in-place concrete. This is an investigation of the seismic response on the precast structures due to the beam to column connection behaviour. Earthquake could damage the whole structure if it is not properly designed, especially in high seismic regions.

Key words: Seismic, precast concrete, beam-column, Frame Building System, Elastomeric Bearing Modelling

1. INTRODUCTION

Structures made in Precast concrete is increasing in India. The special interest of developing any connections is to be done using commonly used construction materials, such as cast-in-place concrete.

This is an investigation of the seismic response on the precast structures due to the beam to column connection behaviour. Earthquake could damage the whole structure if it is not properly designed, especially in high seismic regions.

Connection is one of the crucial elements to limit building damage. A lot of researches have been done on monolithic reinforced concrete buildings. Although several moment resistant connections are designed through researches to sustain high intensity seismic, the connection fabrication is complex which will slow down the construction period. Besides, the actual behaviour of these connections is still vague. The understanding of the actual connection behaviour is very important, especially designed and constructed for high seismic region. Precast technology offers benefits such as reduce construction period, better quality control, cleaner and safer construction sites and others. Precast concrete means concrete which has been prepared for casting and the concrete either is statically reinforced or prestressed.

Meanwhile a precast concrete element is of a finite size and must therefore connect with other elements to form a complete structure. When two elements are connected, problems such as shrinkage, thermal or load will induced strains and cause volumetric changes. The volumetric changes cause movement between the two elements and internal friction between the two elements surface is provided by using various methods such as inserting dowel between beam to column connection. Apart from that, local crushing at the top of column occurs due to the flexural rotation of the beam. Therefore, a bearing pad is provided to overcome this problem. Another factor need to be considered is the narrow bearing of the suspended element on the vertical element. Consideration for the overall stability of the structure is important too.

Precast concrete structure refers to the combination of precast concrete elements and the structure is able to sustain vertical and horizontal loads or even dynamic loads. So the design and construction of the joints and connections is important to ensure the stability and robustness of the overall structure.

2. LITERATURE REVIEW

1. **Elias Issa Saqan, Evaluation of ductile beam-column connections for use in seismic-resistant precast frames, Faculty of the Graduate School of the University of Texas at Austin, 1995:** Four types of ductile connections were considered in this study. Four half-scale models of prototype precast beam-column connections subjected to reversed cyclic loads have been constructed and tested. The experimental study demonstrated that it is possible to design and construct precast beam-column connections, where beams and columns are joined with ductile connecting elements, to

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Comparative Study of Performance of High Rise Buildings with Diagrid, Hexagrid and Octagrid Systems under Dynamic Loading

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Abstract - *The developments in construction techniques, materials, structural systems and the analytical methods for analysis and design opened the door for the growth of high rise buildings. The structural design of tall buildings is governed by the action of lateral loads due to wind or earthquake. Lateral load resistance of a structure is offered by interior structural systems or exterior structural systems. Exterior structural system constitutes Diagrid, Hexagrid, Pentagrid and Octagrid Systems. Recently, Diagrid structural system is adopted in tall buildings due to its structural efficiency, superiority in aesthetic appeal and flexibility in architectural planning. Diagrids, Hexagrids and Octagrids contain triangular or diamond shaped modules, hexagons and octagons respectively, throughout exterior of structure and they don' t have any external vertical columns. Due to inclined columns, lateral loads are resisted by axial action of the diagonal. A regular floor plan of 36 m x 36 m size is considered. ETABS V15 software is used for modelling and analysis of structural members. Twelve models are created collectively of Exterior Braced steel frame structure, Diagrid, Octagrid and Hexagrid buildings with regard to variation in their diagonal angles and module density. Equivalent static and Response spectrum analysis of these models have been carried out to examine their performance. A comparison of parameters Storey Shear, Storey drift, Storey displacement, Time period and Structural weight is done to determine the efficient and cost effective structure.*

***Key Words*:** **High Rise Structure, Diagrid, Hexagrid, Octagrid, Equivalent Static and Response Spectrum Analysis**

1. INTRODUCTION

High rise buildings are booming right now especially in major cities of world, due to the progression of efficient structural systems, advances in the construction technology and shortage of urban land available for construction. Lateral loading due to wind or earthquake are the governing factors in the design of high rise buildings along with the action of gravitational loading. In order to resist the lateral loads, either interior or exterior structural systems are employed. The widely used internal lateral load resisting structural systems include rigid frame, braced frame, shear wall and outrigger structure whereas the exterior systems constitute tubular, diagrid, pentagrid, hexagrid and octagrid structures. Lately, diagrid structural systems are adopted in tall buildings, owing to its structural competency, elegance in appearance and resilience in the aspect of architectural planning.

In the diagrid structures, the vertical columns from the periphery of the structure are eliminated and it consists of diamond shaped modules. A triangulated configuration is formed in the diagrid structural systems because of the modules and due to this, diagrids are able to carry gravity and lateral loads and distribute them in a very uniform and regular pattern. In addition, by the usage of diagonals, lesser amount of material is used. Also, due to the elimination of columns, much space is available to make the structure more flexible. Module size or diagrid module height is the number of stories in the Diagrid module. Moreover, diagrid's diagonal angle is the angle between the diagonal members and the horizontal beams in the exterior of the structure. Diagrid module size and Diagonal angles both play a key role in structural, architectural and aesthetic concepts of these structures.

The hexagrid consists of multiple hexagonal grids at the exterior perimeter surfaces of building. The hexagrid system is a particular form of belt trusses mixed tubular system and resists lateral loads acting in tension or compression. Similarly, Octagrid contain several octagons arranged at the exterior of the structure. Module density of a hexagrid or octagrid denotes the number of hexagon or octagon modules around the periphery. If more number of modules can be incorporated around the periphery, the building is said to be of high module density and vice-versa.

2. RESEARCH SIGNIFICANCE

Construction of multi storey building is rapidly increasing throughout the world due to the rapid growth of urban population and limitation of available land. As the height of structure increases, the influence of lateral loads increases and requires lateral load resisting structures to resist them. The diagrid structural system is widely used for recent tall buildings due to the structural efficiency and aesthetic potential. Hexagrid structural system can be used to challenge the limit to building height in diagrid. The employment of Diagrid, Hexagrid or Octagrid structural systems in a building give rise to numerous advantages like reduction of interior columns giving large column free spaces that can be used as indoor sports auditoriums, exhibition halls etc. The inclined columns take up gravity as well as lateral loads unlike the conventional vertical columns. Also, these systems lead to huge savings in terms of material cost. Hence, it is necessary to compare the three systems of Diagrid, Octagrid, and Hexagrid with an exterior

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Comparative Removal Of Chromiun Using Vermiculite Blended Chitosan Composite

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ABSTRACT

A specific amount of chromium is required for normal may cause toxicity, including liver and kidney problems-; removed from waste water before discharging it. In thi. chitosan coated carbon based bio-sorbents were prepared ion (Cr^{6+}) from water by changing various parameters su pHBoth the adsorbents exhibit maximum chromium ion r 5g/100 ml and contact time 300 min. Sorption data were study and thus, data well fitted with Freundlich's isother kinetics.

Key words: Toxic metal, Biosorption, Chitosan bler Carbon(CCC), Isotherm modeling and Kinetics study

1. INTRODUCTION

Chromium compounds generally exists in the environment as trivalent chromium ion is a micro nutrient in trace amount, but h than Cr(III) and suspected carcinogen [1] Daily intake of chron food and water [2].

Major sources for chromium such as, electroplating, metal production, pigments, brass, chemical manufacturing, electrica contaminate the water[3]. Besides these, ores are

believed to be the major donors of chromium through v extractions[4]

The toxic action of Cr(VI) is due to the negatively charged easily cross cellular membranes by means of sulphate ionic cl reactions leading to formation of various reactive intermedi organelles, proteins and nucleicacids[5]. Chromium also inter which cause reduced growth and phytomass, foliar chlorosis, stu such as, lipids and proteins are oxidatively damaged by this hea which includes antioxidants enzyme, nitrate reductase and ribon

...philic natural polymer produced by alkalin and crab shells, is the most abundant bio ter mainly consisting of β-(1-4)-linked-2-a

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Review: Parametric Optimization Of EDM Machine Using Taghuchi & Anova Technique

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Abstract *-This paper represents the overall review on Electric Discharge Machining (EDM). The invention of new materials need a development of new machining process regarding high hardness of material and make a effective machining process. So EDM is mainly used for those materials which are very difficult to machine with conventional machining process. In today's competitive environment, the companies all around the world are trying to increase their profits without increasing the sales price of their products. This can only be done through minimizing the losses that are occurring during production. The reduction in production time, step up profits an Optimization of process. Parameters have a very major role for enhancement of productivity. Therefore, an experimental work for the optimization of parameters can solve the above problems. In last decade, the researcher has found different way to improve the parameters of EDM process. So this paper reviews the different effective research in field of EDM process to find optimum parameters for machining process with Taguchi technique.*

Keyword – Electric discharge machining (EDM), process parameters, optimization, Taguchi Technique.

1. INTRODUCTION

An Electric Discharge Machining is a thermo-electric, spark erode non- traditional operation. EDM machine have large used in the manufacturing die cavity with large components, small deep diameter hole and various intricate holes and other high precision part [1]. In conventional machining process tool have large hardness than the work piece material [2]. So for machining process use high hardness material like nickel based alloy and titanium alloy by the small and large scale industry and with traditional operation their machining are not so much high but the results into poor surface finish and less tool material life[2]. Moreover EDM machining used for machining the difficult contours and cavity [3]. This machining is successfully operated to those materials which are electrical conductivity.

1.1 WORKING

Electrical spark machining is a Thermo-electric non-traditional machining processes. Local melting of the material and content of the work piece is removed through evaporation. Electric sparks caused by sparks between two electrode surfaces are generated between the two electrodes via an electrode dielectric a short distance from each other and are held at a large potential gap is set up across them. Localized high temperature areas are formed Work piece material in the local area melts and evaporates. Waste molten and vaporized material between the electrode and work piece a spacing of debris particles carried by the dielectric flow. To resist an excessive this heating, electricity is supplied as short pulse. Spark is where the gap between tool and the work piece surface is the smallest.

A spark material, the difference increases to a different point on the surface of the material shifts the position of the spark is removed later. In this way many sparks work piece- equipment at various locations on the entire surface of the gap are the same. Sparks caused by the removal of material, after some time interval of an equal distance across the gap across the tool material and the work piece is formed. Device is held steady; the machining will stop at this level. But if the device in the direction of the work piece is continuously fed more material is removed and the process is repeated. It has achieved the required depth of cut until the tool is fed. Finally, the device size replica of a cavity is formed on the same work. The work piece and work tool as the electrode in electrical circuits. Pulsed power from a separate power supply unit is supplied to the electrodes. Work piece feed speed appropriate to the device generally shown in Figure 1 between tool and work piece during machining to maintain a constant gap

distance is provide.

1.2 PRINICIPAL OF ELECTRICAL DISCHARGE MACHINING

EDM has a controlled removal of metal through the electric spark erosion is used to extract the metal. In the process, the cutting tool to cut an electrical spark (Erode) finished work piece part production to the desired size as is used. The process of removing

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Validation of Maximum Temperature during Friction Stir Welding of Butt Joint of Aluminium Alloy by using HyperWorks

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Abstract- **During friction stir welding, the maximum temperature at tool workpiece interphase within acceptable limit is responsible for sound quality of FSW joint. The prediction of temperature distribution is an essential aspect in order to perform the process of friction stir welding successfully. The maximum temperature along the weldline is governed by several process parameters. In the present study, simulation of friction stir welding process is conducted using HyperWorks. The virtual experiment of friction stir welding process is performed for the butt joint of Aluminium alloy AA6061 material plates. The model predictions and results were validated with experimental data obtained from work of Zhili Feng et. al. The simulation results are in good agreement with that of experimental results. It is also observed that the temperature distribution in the FSW process is symmetrical along the welding line. Simulation performed on HyperWorks has opened new track of modeling and simulation of friction stir welding.**

Keywords— Friction sir welding, AA6061, Simulation, Maximum Temperature, HyperWorks.

1. INTRODUCTION

Friction stir welding is basically based on the phenomenon of generation of heat due to frictional effect. This welding technology comes within the category of solid state joining process because the maximum temperature reached in friction stir welding is less than the solidus temperature or the melting point of the parent metal. The process parameters in case of friction stir welding are rotational speed of tool, travel speed, axial load & tool geometry as they have direct impact on generation of heat at tool workpiece zone which effects the quality and strength of joint. Many research oriented experiments are conducted in this process for joining of similar and dissimilar aluminium alloys. Other than experiment based work for friction stir welding, there is a huge scope to work on simulation of friction stir welding process by finite element modelling . Several studies of friction stir welding by using commercially available softwares such as ANSYS®, ABAQUS, FORGE® and HyperWorks®. Basically this technique is adopted by scholars for the purpose of pre-experimental simulation in order to predict the response parameters.

In the present study, simulation of friction stir welding process is conducted using commercial software Altair HyperWorks®. The virtual experiment of friction stir welding process is performed on the butt joint of Aluminium alloy AA6061 plates for the experimental data obtained by the study and experiment performed by Zhili Feng et. al. The three dimensional finite element model is developed in order to obtain maximum temperature and it is validated by comparison with the experiment.

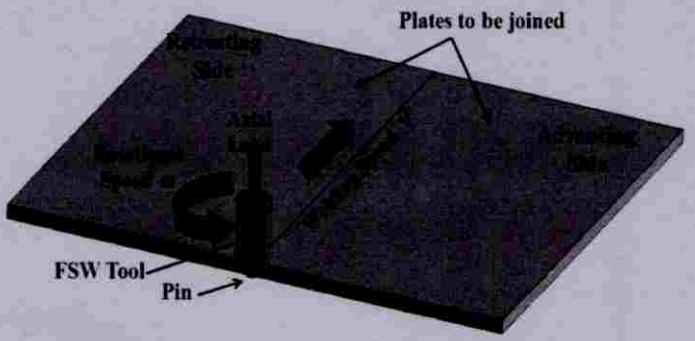

Fig.1 The schematic model of friction stir welding

Human Computer Interaction using Hand Gesture

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Abstract

In this modern age the advancement in ubiquitous computing has made the use of natural user interface very much required. The presence of computers and making use of the facilities of human computer interaction in our societies will obviously bring and mark a positive impact on our societies. Either it was the day when the technologies had not been so advanced or todays when the technologies has been advanced so much that we spent most of our times to communicate, play, do our jobs with the machines and many more, even then human beings had used and are still using a broad range of gestures to communicate or interact with each other. Human gesture is a mode of non - verbal interaction medium and can provide the most intuitive, originative and natural way to interact with computers. Our main goal is to make the interaction between human and computer as natural as the interaction between humans. The objective of this paper is to recognize the static hand gesture images (i.e. frames) based on shapes and orientations of hand which is extracted from input video stream recorded in stable lighting and simple background conditions. We can use this vision based recognized gestures to control multimedia applications (like Windows Media Player, Windows Picture Manager, VLC Player etc.) running on computer using different gestural commands.

Keywords: Gestures recognition; Gesture technologies; Human-computer interaction; Static hand gesture; Vision-based gesture recognition.

1. Introduction

With the massive influx and advancement of technologies, a computer system has become a very powerful machine which has been designed to make the human beings' tasks easier. Due to which the HCI (human – computer interaction) has become an important part of our lives. Now-a-days, the progress and development in interaction with computing devices has increased so fast that as a human being even we could not remained left with the effect of this and it has become our primary thing. The technologies has so much surrounded us and has made a place in our lives that we use it to communicate, shop, work and even entertain ourselves[1]. There are many applications like media player, MS-office, Windows picture manager etc. which require natural and intuitive interface. Now-a-days most of the users uses keyboard, mouse, pen, Joysticks etc. to interact with computers, which are not enough for them. In the near future, these existing technologies which are available for the computing, communication and display will become a bottleneck and the advancement in these technologies will be required to make the system as natural as possible.

Nevertheless the invention of mouse and keyboards by the researchers and engineers has been a great progress, there are still some situations where interaction with computer with the help of keyboard and mouse will not be enough.
This is the case with the advancement in hand held devices like mobiles or i-pods or Tabs which are relatively very small in size. It's very difficult to interact with them due to their determined input spaces and small touch screen or keyboard. This is also the case of interacting 3D objects where these devices are incompatible for HCI.

One long-term goal in HCI has been to migrate "natural" means that human used it to interact with each other. With this goal human speech recognition was the area of research for a decade. It has made a tremendous

Tracking And Management Of Construction Projects Using Primavera

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Abstract: *Construction industry is an integral component of a nation's infrastructure and industrial growth. Eventhough construction industry is the second largest industry in India, the growth of this industry has been differential across the nation. Proper planning, scheduling, tracking and application are the major parameters in construction industry. This study involves tracking of the ongoing construction and management of a new building using primavera. The tracking of the project during construction is necessary to control the variance in the project and to know the forecasting cost of the project. Construction planning and scheduling is one of the important tool in construction. In the present study the tracking and forecasting was done by a method called Earned Value Management (EVM). The importance of construction management has been reviewed and the tracking of ongoing residential building as well as the management of new construction of an apartment building has been done.*

Key Words: Planning, Scheduling, Construction Management, Tracking, Primavera, EVM

1. INTRODUCTION

The construction industry has been developed rapidly from the early days. One of the development was planning and scheduling using software. In construction industry, mostly used software for the planning and scheduling are MS Project and Primavera. But in India the use of the Primavera is rare and most of the construction has been taken place without the use of software which leads to extension of the duration and the cost of the project. In this study, the use and need of the project management software has been explained considering residential building and apartment building. The tracking was done in residential building and the management of the apartment building up to planning process using the project management software Primavera P6.R8.2.

1.1. PROJECT MANAGEMENT

Planning is important for any work to reach its goal and Proper Planning leads to excellent result. The three basic things needed for the planning of construction projects are scope, time and cost. The efficient planning in a construction project involves project management plan, managing scope, collecting requirements, creating WBS, defining activities and their relationships, sequencing the activities, duration of the activities and estimation. If any risk arises then steps are taken to minimize or remove the risk.

1.2. EARNED VALUE MANAGEMENT

Earned Value Management is the most frequently used performance measurement method. EVA looks at schedule, cost and scope performance measurements of a project together. To perform the earned value calculations, it is needed to determine the following three parameters:

Planned Value (PV)

Earned Value (EV)
Actual Cost (AC)

The planned value is the cost of the work that has been budgeted for an activity or for the project during a certain time period. The estimations and budgets are established during Planning Process. The Actual Cost is the cost of the work including direct and indirect costs. The Earned Value is the value of work that has been completed to date. The EVM is categorized as shown in Fig.1

1.2.1. TRACKING:

Planning is important for the success of the project. To know the project has been executed according to the planning, tracking has been takes place. Tracking helps to stick to the plan during execution. The tracking is the process of analyses the updated schedule whether the cost and units of the project are beyond or ahead or equal of the planning. The tracking is done by EVM (Earned Value Management).

Tracking is comes under the process of monitoring and controlling of the construction project. Tracking of the project can be done after updating the project by monitoring. If the project is deviated from the schedule or cost it can easily be identified and controlling can be done.

Study on Static and Dynamic Analysis of Multi-storied Building in Seismic Zones

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Abstract: ***In India with a seismic moderate zone, the equivalent static force method to estimate the seismic force, subsequent vulnerability and behaviour o RC building under seismic load is inadequate. From past seismic tremors, it is seen that on the off chance that the structures are not appropriately examined and developed with required quality, then it may lead to great destruction and loss to human lives. It has been demonstrated that numerous structures are completely or halfway harmed because of the quake. This reality was never disregarded while plan of multi-story structures by the basic specialists, scientists to guarantee wellbeing against tremor powers while erection. In this paper seismic reaction of a private G+10 RC outline building is breaking down by the direct examination methodologies of Equivalent Static Lateral Force and Response Spectrum techniques utilizing ETABS Ultimate software according to the Seems to be 1893-2002-Part-1. These analyses are carried out by considering different seismic zones. A substitute response like lateral force, story drift, displacements, base shear are plotted to think about the consequences of the static and dynamic investigation.***

Index Terms: Dynamic analysis; Equivalent static analysis; Response spectrum analysis; Seismic Zones.

1. INTRODUCTION

A seismic tremor might be characterized as the arrival of versatile vitality by sudden slip on a blame and coming about ground shaking and transmitted brought about by slip. Tremors are one of the most exceedingly bad among the cataclysmic events. Around 1 lakh tremors of extent in excess of three hit the earth each year. As indicated by a preservationist gauge of in excess of 15 million, human lives have been lost and harm worth hundred billion of dollars have been dispensed in the written history due to these. Also, Indian-Subcontinent, especially the north-eastern locale, is a standout amongst the most tremors inclined areas of the world. The idea of quake extent was first created by Richter (e.g., Richter 1958), and henceforth, the term Richter scale. The estimation of size is acquired dependent on chronicles of tremor ground movement on seismographs. Practically speaking, there are a few unique meanings of size; each could give a marginally extraordinary estimation of the size. Subsequently, the greatness is certainly not an exact number. Charukesh et al. studied to show the nature of the reinforced concrete building. A different response like storey drift, story shear, base shear, seismic weight. Zone V type III soil has the highest valve of base shear, storey drift, storey shear among all the seismic zones [1].

Balaji U et al. considered a G+13story building. The building was inspected for shake loads using ETABS. In case the material properties were immediate, static and dynamic examination was performed. Another response like evacuation and base shear were resolved and it was seen that dislodging extended with the building stature. [2].

M. Lakshmi et al. studied to show modal analysis to the understanding the behavior of building using the Response Spectrum Method. In this paper, Dynamic Analysis of 4 storied Reinforced Concrete building was considered using STAAD pro and ETABS softwares. To calculate, Response Spectrum Method was used to evaluate the base shear. The base shear difference between the STAAD PRO and ETABS was just 1.3% [3].

Anirudh Gottala, et al. studied G+9 story building to examine static and dynamic analysis of G+9 multistoried building. The direct seismic investigation was finished by the proportional static strategy and dynamic technique utilizing STAAD-Pro according to 1893-2002-Part-1. Relocations were determined We can see that the qualities for Displacements of sections are 40 to 45% higher for Dynamic investigation than the qualities got for Static analysis [4].

Sultan, M. R et al. studied different shapes are seriously influenced amid tremors, particularly in high seismic zones. The lesser base shear is attainment fit as a L building and the higher base shear is getting fit as a L building. Results have been checked that C shape building is increasingly powerless contrast with all other distinctive shapes. [5].

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Real Time Video Object Tracking Using Motion Estimation

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Abstract – Real time object tracking is considered as a critical application. Object tracking is one of the most necessary steps for surveillance, augmented reality, smart rooms and perceptual user interfaces, video compression based on object and driver assistance.

The proposed method, efficient motion detection and object image capturing based on background subtraction using dynamic threshold approach with mathematical morphology. Here these different methods are used effectively for object detection and compare these performance based on accurate detection.

Here the techniques frame differences, dynamic threshold based detection will be used. After the object foreground detection, the parameter of coordinates will be determined. For this, most of previous methods depend on the assumption that the background is static over short time periods. In dynamic threshold based object detection, morphological process and filtering also used effectively for unwanted pixel removal from the background. The background frame will be updated by comparing the current frame intensities with reference frame. Along with this dynamic threshold, mathematical morphology also used which has an ability of greatly attenuating color variations generated by background motions while still highlighting moving objects.

Finally the results will be shown that used approximate median with mathematical morphology approach is effective rather than prior background subtraction methods in dynamic texture scenes and performance parameter.

Key Words: Contour, Motion Detection, Object Detection, Object Tracking, Shape Features

1. INTRODUCTION

Video object tracking has got wide application in vision, security, observational issues in natural science and in various other fields. Video surveillance for security purpose is one of its major applications. Object tracking has high priorities in religious places, market buildings, courts, train stations and airports.Various other applications include military, astronomy, road traffic regulation, robotics, medical imaging. Air traffic control is a typical application of video object tracking, where aircraft are more or less continuously visible on radar, but in case the transponders are absent the identity is only revealed when the pilot reports by radio.
Video analysis basically involves three key steps:

To detect the moving object under interest.

1) Track the object from frame to frame

2) Analyse the object tracks to know their behaviour.

In simple words, tracking may be defined as the estimation of the trajectory of a moving object in the image plane as it moves around the scene.

Consistent labels are assigned to the tracked objects in each frame of a video. Further based on the tracking domain, a tracker can give useful information such as area, shape, and orientation of the object under interest.

Object tracking can be complex due to following reasons -

Noise in images,

Complex object motion,

Articulated nature of non-rigid objects

Scene illumination changes, and

Real-time processing requirements.

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IOT & Wireless Sensor Networks in Precision Agriculture

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Abstract: ***Internet of Things (IoT) enables various applications (crop growth monitoring and selection, irrigation decision support, etc.) in Digital Agriculture domain. Precision agriculture is set to provide higher productivity and a better use of resources when compared to traditional methods and this will result in lower costs with higher yields. As water supplies become scarce because of climatically change, there is an urgent need to irrigate more efficiently in order to optimize water use. In this context, farmers' use of a decision-support system is unavoidable. Indeed, the real-time supervision of microclimatic conditions are the only way to know the water needs of a culture. Wireless sensor networks are playing an important role with the advent of the Internet of things and the generalization of the use of web in the community of the farmers. It will be judicious to make supervision possible via web services. The IOT cloud represents platforms that allow to create web services suitable for the objects integrated on the Internet. In this paper we propose an application prototype for precision farming using a wireless sensor network with an IOT cloud.***

Keywords: Precision Agriculture (PA), Wireless Sensor Networks (WSN), Internet of Things (IoT), Application Prototype

I. Introduction

India is agriculture oriented country. 69% of Indian population has agriculture as their main occupation or side business. The production or cultivation of useful crops in the Ecosystem produced by the people is known as agriculture. From another point of view, the farmers are the ecosystem engineers who find new ways for cultivation of crops. The water management practices are also adapted by many villages which provided water for drinking and other purposes in the dry season. In present time, in Indian agriculture still faces the challenges: Dependence on monsoon, fragmented land farming and holding, traditional farming practices, poor infrastructure in rural areas and less usage of technology applications. The advancement in the technology will help farmers increasethe crop gain.

The new concepts in the technologies now a days are (i)Internet of Things (IoT) (ii) Wireless Sensor Network (WSN) (iii)Precision Agriculture (PA).

Internet of Things (IoT)

The internet of things is the network in which the real world objects are connected to each other which tends to form many embedded system including fields such as electronics and sensors through which the data can be transferred and received reliably. A real world thing/object in Internet of Thing in terms of animal farming can be an animal with Biochip transponder which when assigned an IP address and an ability to reliable data transfer over the network can be helpful to the farmer. Also with the use of sensor, application on the mobile phones and the transfer of useful data generated by the system will make it easy to use. The system has wide area ofapplications like Open Farm, Greenhouse Farming. In Open Farming, irrigation, water level etc. can be managed with this system whereas in Greenhouse Farming, temperature control, moisture control are the applications of this system. The system isalso useful in the field of Gardening.

Precision Agriculture (PA)

Precision agriculture (also known as smart farming) uses in- ternet of things (IoT) solutions together with Big Data methods to provide for more efficient management of resources. It is a significant vertical market [1] that includes the management of crop yields, livestock, seeding, fertilizer use and water. The benefits of precision agriculture (PA) include increased profitability and reduced environmental impact [2].

In the early years, PA consisted mainly of map based tech- nologies using geo-statistical methods like GIS and satellite remote sensing and the main application of PA was to manage fertilizer use [2]. Sensor use was not widespread since sensors were either too costly, too inaccurate or unavailable for the applications required. Surveys during the early 2000's showed that few farmers used PA technologies and the main barriers to the adoption of these methods were the lack of technologies to deal with the large amounts of information, the lack of scientific validation, high costs and no training or technology transfer [2].

This has changed with the development and testing of prototype PA systems, the rapid development of IoT [3] and Big Data [4], and the decreased cost of sensors. IoT solutions in agriculture now form a cycle of i) monitoring through sensors, ii) analysis and

Design & Development of Water Management System

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Abstract:
Undoubtedly, water is one of the most important resources on entire globe. No one including human beings, animals, plants and insects can live without water. Water is a scarce resource and it may deplete over coming years due to overuse. The bad quality, overflowing from tanks , leakage in pipes and inefficient usage of water are the main cause which leads to the wastage of water. So it is necessary to have control on water wastage and usage as well by introducing or building a system which will overcome the water wastage related issue using Internet of Things (IOT).

Keywords:- Sensors, cloud storage, real time monitoring, microcontroller, Internet of Things (IOT).

1. INTRODUCTION

Recent development of Infrastructure, increase in population, leakage in pipes, uncontrolled usage and wastage of water, pollution, etc leading to scarcity of water is faced by human beings. So it is necessary to find the alternative system which can help to reduce the water wastage issues for which Internet of Things (IOT) is the solution which helps in building an automated system for real time water monitoring. Embedding different sensors with a micro controller we can create such a system using the cloud services for data storage.

As there is an uneven distribution of water across the city an automated system must be developed so that the water is distributed equally with equal pressure to the residents in the city. For checking the water quality the parameters like Ph, turbidity, temperature, TDS, etc. must be calculated. Level sensors are used to check the water level in tanks, pressure, flow sensors can be used to detect the leakage in pipes. The design of a water level sensor device is able to detect and control the level of water in a certain water tank. The system firstly senses the amount of water available in the tank by the level detector part and then adjusts the state of the water pump in accordance to the water level information.

There has been wastage of water daily through the pipeline leakages due to it full water were never arrived to the taps. The existing system are still lacking abilities to detect accurate estimation of water leakage in water tanks. The aims are to perform a small-scale study of existing pipeline leakage detection system, to develop a real-time prototype pipeline leakage alert system and to validate the proposed prototype through experimentation. Mobile phone can be configured as the alerts transmitter of the system to the user in case of water leaks.

2. LITERATURE REVIEW

A. Water Leakage System Using IOT [1]

In this paper, the flow of water through the domestic pipeline can be monitored, forecasted and visualize from anywhere in the world using internet through computer or smartphone. The collected data can be analyzed for making predictions to the users and also for demand management, asset management and leakage management. With the water as flowing liquid the system was tested successfully. The work can be extended to forecast data for larger communities with customer satisfaction involving low cost and better performance of the overall system.

According to the author of the paper, the proposed model to forecast and monitor the consumption of water basically consisted of flow meter, micro controller and cloud infrastructure. Hall effect based flow meter was used to measure the flow rate of the water and Arduinouno and Raspberry Pi acted as microcontroller based devices. The flow meter measured the flow rate of the water and generated a pulse signal accordingly. The flow meter was wired with arduino so as to sense the pulses from flow meter. The raspberry Pi which is a microcomputer receives the data from arduino microcontroller which is connected to flow meter and was programmed to read the arduino signal, process the data and store in raw data files. The raspberry Pi was programmed such that it processed the raw data and uploaded them into the web server. In order to process the request from large number of customers cloud interfacing was initialized. The end users via web interface were able to visualize the data. The data from the database would then be utilized by data prediction algorithm for making predictions as per the users. The request for the prediction comes from the users via the web interface.

So this paper provided us the result showing that the alert message would be sent after being recognized at certain level and then the user would acknowledge the message and act with actions. An experiment testing was conducted to see the results

A Review on various NOx emission reduction techniques for C.I. Engine

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Abstract – *We all familiars with IC engines like SI engine and CI engine. Out of these the CI engine having more thermal efficiency as its Compression Ratio is high. It is more beneficial to our national development because, CI (Diesel engine) is used in various applications like Automobile, Locomotive Marine Engine, Power Generators, Boiler mechanism. Even though, the CI engine is more beneficial but it also hazardous to human being because it creates emissions like SO2, NOX, HC, Particular Matters. The NOX is more harmful to human health because its oxides affects on Respiratory System of Human Body. Also it is hazardous to ecosystem like it increase the level of Ozone layer, due to NOX Smog and Acid Rain are happened and our environment system is disturbed. There are many techniques to reduce this NOX likes EGR, SCR system. But ECR system is less efficient, So our project intension is to control NOX emission by using SCR (Selective Catalytic Reduction). In our project we use DEF (Diesel Exhaust Fluid) as Catalytic Reducer and it will give 90% reduction of NOX. It convert the NOX into fresh N2 and water vapour (H2O).*

Key Words*: (Diesel Engine,SCR system, DEF(Diesel Exhaust Fluid).*

1. INTRODUCTION

Internal Combustion Engines generates undesirable emissions during combustion process, Because of non-stoichiometric combustion. Due to incomplete combustion various harmful emissions are produced like Hydro carbons (HC), Oxides of Sulpher (SO2),Oxides of Carbons (COX), Oxides of Nitrogen (NOX) and Particular Matters. To control this emission now a day EGR (Exhaust Gas Recirculation) system is used, but its efficiency to control NOX is very less. This NOX is very harmful to human being and also environment. Our project aim is to control this NOX emissions by using SCR system with DEF. During the operation load of the engine, SCR reached efficiency over 90%. Used after treatment system is suitable for reduction of harmful pollutants according to the Tier 4f norm.

However, with the present technology this is not possible, and after-treatment of exhaust gases as well as in-cylinder reduction of emissions is very important. In case of after treatment it consists of mainly of the use of thermal or catalytic converters and particulate traps. Off late, the economic and industrial growth has caused significant reduction in the quality of ambient air. The main sources of emission from the engine are from the engine exhaust system and other from the crankcase. The former is the main cause of air pollution. The main constituents of the engine exhaust gases are unburnt hydrocarbons, carbon-dioxide, carbon monoxide, oxides of nitrogen and particulate matter. Diesel (compression-ignition) engines can be run at higher compression ratios, which result in higher thermal efficiencies compared to gasoline (spark-ignition) engines. As a consequence, Diesel engines can reduce greenhouse gas emissions based on the same mileage driven in comparison to gasoline engines. One challenge for the Diesel engine is the removal of NOx (nitrogen oxides) from the exhaust, which is a major source of acid rain and chemical smog. It can also cause respiratory problems for people. The selective catalytic reduction (SCR) of NOx is a promising technology for NOx reduction. Some of the major catalytic industries are Johnson Mathey India Pvt Ltd, Cats Direct, Emitec Emission Controls Private Limited, Automotiev Merchandising Corporation, Gencat Limited and Cummins India Limited.

1.1 EXHAUST GAS RECIRCULATION-

Exhaust gas recirculation (EGR), on diesel engines, can be used to achieve a richer fuel to air mixture and a lower peak combustion temperature. Both effects reduce NOx emissions, but can negatively impact efficiency and the production of soot particles. The richer mix is achieved by displacing some of the intake air, but is still lean compared to petrol engines, which approach the stoichiometric ideal. The lower peak temperature is achieved by a heat exchanger that removes heat before re-entering the engine, and works due to the exhaust gases' higher specific heat capacity than air. With the greater soot production, EGR is often combined with a particulate matter (PM) filter in the exhaust. In turbocharged engines, EGR needs a controlled pressure differential across the exhaust manifold and intake manifold, which can be met by such engineering as use of a variable geometry turbocharger, which has inlet guide vanes on the turbine to build exhaust backpressure in the exhaust manifold directing exhaust gas to the intake manifold. It also requires additional external piping and valving, and so requires additional maintenance.

Various Attacks and Countermeasures in Mobile Ad Hoc Networks: A Survey

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***Abstract:*—A Mobile ad hoc network (MANET) is self organizing multi-hop network. In general MANET is characterized by the open wireless medium and very open to anyone. Due to the unique characteristics such as dynamic network topology, limited bandwidth, limited battery power and infrastructure less network environment, MANET is lacking in centralized authorization and highly vulnerable to malicious attacks. Thus the security is a critical problem when implementing MANET. In this survey, we have investigated different tools used by various attacks in MANET relating to fail routing protocols and described the mechanisms used by the secured routing protocols to counter them. The main objective of this paper is to present an extensive survey of the known attack detection, prevention approaches and to present new dimensions for their classification.**

Keywords — Routing protocol; Security; Attacks; MANET; Vulnerability; Active; Passive; Malicious; AODV; DSR; OLSR; RREQ; RREP.

1. INTRODUCTION

MANET is a self configured network consists of mobile nodes that communicate through a wireless medium in the lack of any centralized control of the network **[1].** Each node can travel about freely in space. Therefore, the topology of the network changes dynamically a MANET can be constructed quickly at a low cost. MANET has a dynamic topology such that nodes can easily join or leave the network at any instance. They have many possible applications, mainly, in military and rescue areas such as linking soldiers on the battlefield or creating a new network in place of a network which collapsed after a disaster like an earthquake and flood.

ROUTING PROTOCOLS IN MANET

Currently, numerous efficient routing protocols have been proposed. It can be classified into three categories, such as reactive, proactive and hybrid.

Proactive protocols: Proactive protocols are called table-driven protocols; includes destination sequenced distance vector (DSDV) protocols and Optimized Link State Routing Protocol (OLSR) **[2, 3].** In this type of protocols, each node maintains its own routing table and update by periodically exchanging routing messages with other nodes.

Reactive protocols: Reactive protocols are called on demand protocols; includes Adhoc on-demand distance vector (AODV) **[4, 5, 6]** and dynamic source routing (DSR) protocols **[7].** In reactive routing schemes, each node searches for a route, only when needed, to establish a connection with other nodes to accomplish data transfer.

Hybrid routing protocols: Hybrid routing protocols such as core extraction distributed ad-hoc routing (CEDAR) protocol **[8],** combine the best features of both reactive and proactive protocols. It uses reactive approach when the destination is within the range and applies proactive approach when the destination is outside the range. The routing protocols relay on carry between nodes owed to the lack of a centralized administration and believe that all nodes are truthful and well-behaved. A malicious node can start routing attacks to disturb routing operations, or denial-of-service attacks **[9]** to provide refuse services to legitimate nodes.

CHARACTERISTICS OF ATTACKS

Nature of attacks: An attack is one of the events which aim at compromising the security of the network. They are many and varied in these MANET which aimed at disrupting the operation of the network. The malicious nodes come in the way and interrupt the normal function of the network.

Active attacks: Active attacks are actively altering the data with the intention to obstruct the operation of the targeted networks. Such attacks include actions as communication modifications, message replays, message fabrications and the denial of service (DoS) attacks. Active attacks were characterized by route disruption, route incursion, node segregation and resource consumption **[9].**

A Survey of Mobile Ad Hoc Network Attacks

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Abstract:

Security is an essential requirement in mobile ad hoc network (MANETs). Compared to wired networks, MANETs are more vulnerable to security attacks due to the lack of a trusted centralized authority and limited resources. Attacks on ad hoc networks can be classified as passive and active attacks, depending on whether the normal operation of the network is disrupted or not. In this paper, we are describing the all prominent attacks described in literature in a consistent manner to provide a concise comparison on attack types. To the best of our knowledge, this is the first paper that studies all the existing attacks on MANETs.

Keywords: MANET, Survey, Security attacks.

1. Introduction

In a MANET, a collection of mobile hosts with wireless network interfaces form a temporary network without the aid of any fixed infrastructure or centralized administration. A MANET is referred to as an infrastructure less network because the mobile nodes in the network dynamically set up paths among themselves to transmit packets temporarily. In a MANET, nodes within each other's wireless transmission ranges can communicate directly; however, nodes outside each other's range have to rely on some other nodes to relay messages. Any routing protocol must encapsulate an essential set of security mechanism. These mechanisms are used to prevent, detect and respond to security attacks. There are five major security goals that need to be addressed in order to maintain a reliable and secure ad-hoc network environment. They are mainly:

Confidentiality: Protection of any information from being exposed to unintended entities. In ad hoc networks this is more difficult to achieve because intermediates nodes receive the packets for other recipients, so they can easily eavesdrop the information being routed.

Availability: Services should be available whenever required. There should be an assurance of survivability despite a Denial of Service (DOS) attack. On physical and media access control layer attacker can use jamming techniques to interfere with communication on physical channel. On network layer the attacker can disrupt the routing protocol.

On higher layers, the attacker could bring down high level services.

Authentication: Assurance that an entity of concern or the origin of a communication is what it claims to be or from. Without which an attacker would impersonate a node, thus gaining unauthorized access to resource and sensitive information and interfering with operation of other nodes. **Integrity:** Message being transmitted is never altered.

Non-repudiation: Ensures that sending and receiving parties can never deny ever sending or receiving the message.

2. Type of Security Attacks

2.1. *External vs. Internal attacks*

External attacks, in which the attacker aims to cause congestion, propagate fake routing information or disturb nodes from providing services. Internal attacks, in which the adversary wants to gain the normal access to the network and participate the network activities, either by some malicious impersonation to get the access to the network as a new node, or by directly compromising a current node and using it as a basis to conduct its malicious behaviors.

A Dynamic Rule Creation Based Anomaly Detection Method for Identifying Security Breaches in Log Records

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Abstract

Evidence of security breaches can be found in log les, created by various network devices in order to provide information about their operation. Huge amount of data contained within these les usually prevents to analyze them manually, therefore it is necessary to utilize automatic methods capable of revealing potential attacks.

In this paper we propose a method for anomaly detection in log les, based on data mining techniques for dynamic rule creation. To support parallel processing, we employ Apache Hadoop framework, providing distributed storage and distributed processing of data. Out-comes of our testing show potential to discover new types of breaches and plausible error rates below 10%. Also, rule generation and anomaly detection speeds are competitive to currently used algorithms, such as FP-Growth and Apriori.

1. INTRODUCTION

Information systems and computer networks provide information about their state and operation in the form of log records. These records are composed of log entries containing information related to a speci c event, which can be related to security [6]. Potential security breaches can be revealed by analyzing log les and looking for anomalies that occurred at a certain time during the device operation. Organizations today utilize complex informa-tion systems producing large amounts of log messages, making it infeasible to analyze them manually. Automatized methods, if implemented correctly, can help us to aim at important records, revealing malicious code, non-privileged system access or resources usage, policy breaches and also identify the source of these activities [13].

As stated in NIST SP800-92 [6], organizations should establish pro-cesses for log management, incorporate these processes into their policies and clearly de ne the goals and requirements for log management.

There can be various types of log messages, commonly inspected ones usually originate from operating systems, network devices, web servers and various applications using the network. SANS Institute published a report stating six most critical report categories that should be collected and ana-lyzed in order to identify possible breaches[1]:

1. Authentication and Authorization Reports
2. Systems and Data Change Reports
3. Network Activity Reports
4. Resource Access Reports
5. Malware Activity Reports
6. Failure and Critical Error Reports

In our work we focus on the third category, but the method can be easily extended to other categories as well. Common types of security software capable of capturing these log are antimalware software, IDS/IPS, remote access software, web proxies, vulnerability management software, authen-tication servers, routers, rewalls,

A Web Mining Process for Knowledge Discovery of Web usage Patterns

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Abstract— A number of recent studies are trying to improve the quality and effectiveness of web mining. Web mining is mining of data related to the World Wide Web, this may be the data actually present in Web pages or data related to Web activity. This paper present the frame work for usage pattern discovery in order to knowledge management. Here is proposed a new reference architecture based on reusable building blocks. The system is designed to support a decision maker in making decisions by adopting a clear separation of tasks. It allows the analysis of web information by extracting,selecting, processing and modelling huge amounts of data.

Keywords- Data mining, web usage mining, information retrieval, pattern extraction.

I. INTRODUCTION

The digital universe known as the world wide web is a very huge place that includes literally billions of web pages and it estimated to continue growth in it. Moreover with this amount of data available online, the WWW is today considered a popular and interactive medium to disseminate information. Web mining is the application of data mining techniques to extract knowledge from web data, including web documents, hyperlinks between documents, usage logs of web sites.

web mining comprises four different steps:

• Resource identification, in which the resources needed for information extraction are identified.

• Pre-processing, in which relevant information is selected from found information sources. This step is directly related to information extraction techniques

• Generalization, in which automatic pattern discovery is made on several web documents. This step uses data mining techniques as well as clustering and classification trees.

• Analysis, in which pattern discovery is validated and interpreted.

These four steps are put together and applied in different ways, according to the type of information source upon which they are made to act.

WEB MINING TAXONOMY

Web mining can be broadly divided into three distinct categories. Figure 1 shows the taxonomy.

1. Web content mining
2. Web Structure Mining
3. Web Usage Mining.

Figure1 Web Mining Taxonomy

Review On Bamboo Reinforced Concrete Slabs And Bamboo Properties

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Abstract –
In the recent years there is significant research into the use of bamboo as a replacement of common High Yielding Strength Deformed HYSD bars which is costly and not environment friendly. This review brings research on the flexural behavior of concrete slabs that were reinforced with bamboo bars subjected to different loadings. The bamboo reinforced concrete slabs shows high elastic behavior and produced large deflections before failure. The review brings the idea about the engineering properties such as durability and mechanical properties of bamboo of using it as reinforcement in concrete slabs. The durability is checked by changing the tensile strength and young modulus of bamboo. It tells about the eco-friendly performance of bamboo over other comparable construction materials.

The review has tried to compile the effects of different methods such as processing and thermal treatment on the physical and mechanical properties of bamboo. The review looks at the flexural behavior of bamboo based slab panels with different materials such as fly ash, EPS infill. This review looks at bamboo because it is a eco-friendly, green and natural material that can help in supporting sustainable development.

***Key Words*: Bamboo, Durability, Thermal Treatment, Processing, Bamboo based slab.**

1. INTRODUCTION

In most developing countries where about 70% of the population lives in villages and there is increasing demand for building materials such as cement and steel which are costly as well as it is renewable and not environment friendly. Thus there is a need to look for innovative material such as bamboo to use it as a reinforcing material[1].It has been investigated that bamboo has adequate material and strength to replace steel reinforcement. The durability tests on bamboo shows that bamboo not only have tensile strength but it could also withstand the contact of calcium hydroxide[7]. Another idea for sustainable construction is the replacement of cement by flyash and bamboo for steel bars. Test results have shown that the load carrying capacity and deformation capacity of bamboo strip as reinforcement is better than the PCC(Plain Cement Concrete) and RC slabs having mild steel as main reinforcement.[8]

2. BEHAVIOUR ON DIFFERENT LOADING SYSTEMS OF BAMBOO SLABS-

C.K. Kankam, B. Odum-Ewuakye 2001- In this paper a series of tests was performed on one-way Babadua reinforced concrete slab under third-point line loads. It provides the results of a study on the flexural strength and deflection characteristics of one-way slabs reinforced with babadua bars. Theoretically, all slabs are under-reinforced, and considering span to effective depth ratios, failure of the slabs was expected to occur over bending failure by fracture of the tension babadua bars. However, many slabs collapsed due to the crushing of concrete in compression after high deflection. On average, the experimental failure loads of slabs are 3.09 and 1.46 times the theoretical flexural and shear strength of the concrete section, respectively.

It concludes that the bamboo stems can be effectively used as reinforcing bars in concrete.

C.K. Kankam, B. Odum-Ewuakye 2005- This paper presents a summary of an investigation on the structural behavior of 14 two-way concrete slabs that were reinforced with babadua bars subjected to concentrated loads. Ten of the concrete slabs were subjected to constant loading while the remaining four slabs were subjected to repeated loading before failure. The mechanism responsible for the failure of slabs were of circular fan pattern. The failure loads from experiment were found to be 170% of the theoretical values. Also the experimental failure loads averaged 148% and 198% of the theoretical punching shear strength of the un-reinforced concrete section under constant and repeated loads, respectively.

The results of the investigation have shown that the stems of babadua plants are structurally suitable and durable as reinforcing bars in concrete slabs.

3. DURABILITY ANALYSIS OF BAMBOO-

Effect of Calcium Chloride Solution on Engineering Properties of Black Cotton Soil

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ABSTRACT: Expansive soil popularly known as black cotton soil is very problematic for Civil engineering structure. Its swell-shrink behavior with seasonal moisture content change cause serious damages to the structure fonded on it. This behavior of black cotton soil necessitates in-situ ground improvement with respect to increasing the bearing capacity and reducing swelling. This paper reveals the efficacy of calcium chloride solution in improving swell and strength properties of Black Cotton Soil by physical diffusion technique.

KEYWORDS: Expansive soil, Swell-shrink mechanism, Physical Diffusion, Free swell ratio.

I. INTRODUCTION

Natural expansive soils have been encountered in arid and semiarid region in the world. In India it is commonly known as Black Cotton soil because of their colour and their suitability for growing cotton. Black cotton soil is one of the major regional soil deposits in India covering about 20% of the area of country [1] [2] and are predominantly located in the Deccan trap covering the states of Maharashtra, Gujarat, Madhya Pradesh, Karnataka, Andhra Pradesh, Tamil Nadu, Uttar Pradesh and Rajasthan. Black cotton soil deposits are boon to farmer but problematic to Civil engineers due to its cyclic volumetric change with seasonal moisture fluctuation accompanied by the loss of strength with increase in moisture content [3][4]. Because of alternate swell-shrink behaviour, there is considerable damage to structures founded on them. The annual cost of damage to the civil engineering structures is estimated at £150 million in the UK, $1000 million in the USA and many billions of pounds worldwide [5].

In the field construction activities many time civil engineer has to encountered with this expansive soils because in field either it used as construction material e.g. dams, embankment, etc. or as foundation material for transferring the structural loads through foundation elements. This necessitates proper remedial measure to modify the soil with respect to control on swelling and increase in strength. Many researchers and investigators have developed various approaches and methods of improving the undesirable characteristics of expansive soil. This paper high light on various approaches reported in available literature for reasonable solution and effect of diffusion of calcium chloride solution on swell and strength property of black cotton soil.

II. LITERATURE REVIEW

Some of the probable methods for ensuring trouble-free performance of the structures on expansive soil are use of under reamed piles[6], provision of CNS layers or alternate cushion of other specified materials[2]. In lieu of composition specified for CNS material different alternative and better compositions of material to be used in the cushion layer (CSS) are also suggested[7], granular anchor piles (GPA)[8], use of stone columns, sand piles[9][10] etc. Expansive soil being clayey soil, techniques like grouting etc. is not feasible for the purpose. Also though various admixtures like lime, cement, fly ash etc. are very effective in soil improvement their use in in-situ ground improvement is practically impossible. Expansive soil stabilization by mixing various chemical additives prove to be effective alternative solution to overcome the undesirable swell shrink behaviour and low bearing capacity[11]. Chemical modification by adding lime has been in practice for the last three decades. The CaCl2 could be an effective

alternative to conventional lime treatment due to its ready dissolvability and to supply adequate calcium ions for exchange reactions [12],[13][14],[15],[16],[17],[18],[19],[20],[21],[22],[23],[24]. In the available literature expansive soil was stabilized by adding chemicals but for in-situ improvement it becomes practically impossible. However the use of water soluble chemicals is considered feasible to improve expansive soil by diffusion technique in this case. Unfortunately, the review of literature on this aspect reveals that very limited work is reported and this diffusion method is inadequately investigated [25],[26],[27]. The proposed work is meant for contributing to some extent in this inadequately investigated domain of in-situ improvement of expansive clay sites by diffusion of calcium chloride solutions of different concentration.

III. LABORTARY INVESTIGATIONS

A REVIEW ON DIFFERENT TYPES OF WASTES USED AS FILLERS IN BITUMINOUS MIX

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ABSTRACT

This paper outlines the ongoing research on different mineral fillers used in bituminous mixes. Many studies regarding their effects on bituminous mixes were also analysed in combination with filler mastic. This paper summarizes the interaction of mineral filler with different properties like temperature, strength, and adhesion between aggregates, low-temperature cohesive strength of asphalt and the chemical composition of mineral fillers.

Keywords: Adhesion, Bitumen, Mineral filler, Mastic, Temperature.

I. INTRODUCTION

The importance of using mineral filler in bituminous mixtures has been well recognised. The intention of using fillers in asphalt mixes can be traced back to 1890, but until as late as 1893 there was still a question as to whether or not it was beneficial to add filler in the paving mixture. In early practices, only carbonate of lime was used, they thought that there will be some chemical reaction between the bitumen and carbonate, later they believed that pulverized silica was used. Later in 1913 richardson stated "filler was defined as a part of the mineral filler with at least 75 percent passing 75mic sieve. Later several experiments have been conducted on different fillers and their properties.

DIFFERENT TYPES OF FILLERS USED IN BITUMINOUS MIXES

Filler is defined as that fraction of an inert mineral passing 75 mic sieve in a bituminous mixture which can perform several functions. Main function is that of filling voids in coarse aggregates, which intensifications the density, stability and toughness of a convenctional bituminous paving mix. Another is the formation of a filler-asphalt mastic in which the particles of dust either may be individually coated with asphalt or are fused into the bitumen in mechanically and colloidal suspension. Excess amount of fillers leads to increase in stability, brittleness and tendency to cracking. Deficiency of filler leads to increase void content, lower stability and soften the mix. The various types of fillers used in bituminous mixes are

Lime

Cement

Fly ash

Pond ash

Stone waste

Saw dust ash

Rice husk ash

Sewage sludge ash

Ceramic dust

Brick dust

Marble dust

Performance of Structural Concrete using Recycled Plastics Coated Aggregate as Coarse Aggregate

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Abstract- One of the main environmental hazards today is the disposal of waste plastics, that is menacing to the landfill. Similarly the construction industries are facing problem due to the inadequate and unavailability of construction materials. The Bhubaneswar Municipal Corporation, Odisha alone generates approximately 540 MT of solid waste per day (TPD). Assuming 6 to 7% is the plastic waste from the total Solid Waste generated in Bhubaneswar alone, the city hence is generating 34 to 38 MT plastic wastes per day. Above this 2% of solid e-waste is generated. It has been observed that disposal of plastic waste may be a serious concern thanks to improper collection and segregation system. However, a couple of technologies are developed to attenuate its adverse effect on the environment. Currently, Worldwide accepted technology used for the plastic disposal is incineration. That it causes release of toxic gases like chlorinated dioxins and furans which eventually cripple the environment hazards, the plastic waste can be used rather than incinerated. So we need to find new construction material as well as a capable method for disposal of plastic waste. The above mentioned two issues have overlapping solution. Hence M25 grade concrete was designed using plastic wastes (PET). M25 grade concrete test sample were casted to study the behavior with various proportions of PET from 0% to 20%. Plastic Bottles were collected from various sites and cut into small pieces. These small pieces which are 10% of coarse aggregate are melted in the furnace and mixed with clean and dry coarse aggregates. A second sample with 20% of coarse aggregate is also made. Then these plastic coated aggregates were cooled for at least 6 hour. Then test samples were casted with plastic coated aggregate. In another mix 10% and 20% plastic were used as a replacement of coarse aggregates. This enables a comparison of compressive strength and flexural strength for hardened concrete with replacement of plastic directly in fresh concrete and with plastic coated on aggregate.

Keywords – Watermarking, Haar Wavelet, DWT, PSNR

1. INTRODUCTION

The Indian housing industry is today consuming about 400 million plenty of concrete per annum and it's expected, that, this might reach a billion tones in but a decade. All the materials required to supply such huge quantities of concrete, come from the earth's crust, thus depleting its resources per annum creating ecological strains. On the opposite hand, human activities on earth produce solid wastes in Considerable quantities i.e., over 2500million tones per annum, including industrial waste, agricultural waste, and other wastes from society. Disposal of such solid wastes involves economic issues also as ecological and environmental considerations. The plastic is one of the recent engineering materials which have appeared in the market all over the world. Plastics are used in the bath and sink units, corrugated and plain sheets, floor tiles, paints, etc. Other than this domestically plastics are used in various forms as carrying bags, bottles, cans and in various medical utilities. Plastics are normally unstable and non-biodegradable. So, their disposal poses problems. Research works are happening making use of plastics wastes effectively as additives in bitumen mixes for the road pavements. Reengineered plastics are used for solving the solid waste management problems [1,13,14,19], a contribution to the effective use of domestic plastic waste in concrete to stop environmental strains caused by them. Plastics are used as replacement of fine aggregates [8,10,12,21], coarse aggregates [20,22] and as plastic fibres [9,18]. Using plastics as fibres, flexural strength increases [11,16,17]. It also enhances crack resistance [2,3,4,11] and hence durability [23].the plastic to semi-plastic concrete revealed to be resilient and capable of withstanding multiple loading and ceased loading cycles without failure, while a solid but still weak concrete could not withstand such loading cycles [5]. The addition of the plastic waste type (pet) to the cement mortar lead to increase the mechanical properties of this mortar [6,7]. With 25% to 30% waste polyethylene have good workability to make holes without any problem. However, when the percentage of waste decrease from 15% or increase from 30%, the workability will be weak and power was generated during the cutting operation [15].

2. Material used in investigation

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An Overview of Data Mining Techniques and Applications

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Abstract: ***Data mining may be defined as the science of extracting useful information from databases. It also called knowledge discovery. Using a combination of machine learning, statistical analysis, modeling techniques and database technology, data mining finds patterns and subtle relationships in data and infers rules that allow the prediction of future. In this paper overview of data mining, Types and Components of data mining algorithms have been discussed. Data mining tasks like Decision Trees, Association Rules, Clustering, Time-series and its related data mining algorithms have been included. The working style and the data required for the algorithms are explained. Each algorithm has its own set of merits and demerits. We have also incorporated the various application domains of Decision Trees and Clustering algorithms.***

Keywords: Data mining Techniques; Data mining algorithms; Data mining applications

1. Overview of Data Mining

The development of Information Technology has generated large amount of databases and huge data in various areas. The research in databases and information technology has given rise to an approach to store and manipulate this precious data for further decision making. Data mining is a process of extraction of useful information and patterns from huge data. It is also called as knowledge discovery process, knowledge mining from data, knowledge extraction or data /pattern analysis, typically deals with data that have already been collected for some purpose rather than the data mining analysis. This means that the objectives of data mining exercise play no role in the data collection strategy. The data sets examined in data mining are often large.

Information: The patterns, associations, or relationships among all this data can provide information.

Knowledge: Information can be converted into knowledge about historical patterns and future trends. **Data Warehouses**: Data Warehouse is a repository of information collected from multiple sources, stored under a unified schema, and that usually resides at a single site. **Association Analysis**: Association analysis is the discovery of association rules showing attribute-value conditions that occur frequently together in a given set of data.
Data Mining: It is the extraction of hidden predictive
information from large databases. Data mining tools predict future trends and behaviors, allowing businesses to make proactive, knowledge-driven decisions.

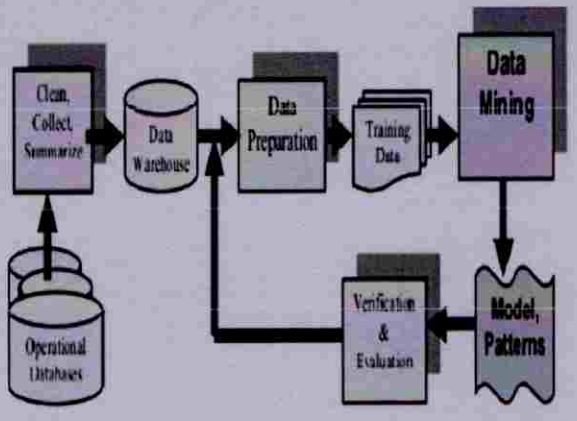

Figure 1: The KDD (Knowledge Discovery Process) and data mining process (Han & Kamber, 2002)

Data Mining Tasks

Data processing [descriptive] Prediction [predictive]

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Credit Card Fraud Detection Using Neural Network And Geolocation

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Abstract. The most acknowledged payment mode is credit card for both disconnected and online mediums in today's day and age. It facilitates cashless shopping everywhere in the world. It is the most widespread and reasonable approach with regards to web based shopping, paying bills, what's more, performing other related errands. Thus danger of fraud exchanges utilizing credit card has likewise been expanding. In the Current Fraud Detection framework, false exchange is recognized after the transaction is completed. As opposed to the current system, the proposed system presents a methodology which facilitates the detection of fraudulent exchanges while they are being processed, this is achieved by means of Behaviour and Locational Analysis(Neural Logic) which considers a cardholder's way of managing money and spending pattern. A deviation from such a pattern will then lead to the system classifying it as suspicious transaction and will then be handled accordingly.

1. INTRODUCTION

1. Credit card fraud is a sort of burglary or unapproved action to make instalment utilizing Visa as a part of an electronic instalment framework. The motivation behind credit card fraud is to get cash or make instalment without proprietor consent. It includes illicit utilization of card or card data without the proprietor consent however it is a criminal trickiness and banned by laws. In light of the technology innovation and software's, clients can shroud their personality and areas while submitting any exchange over the web, which expands the misrepresentation over the web.This paper gives the knowledge about various sorts of techniques used by the frauds and proposes a method to overcome it.

2. The various frauds are carried out as stolen cards, application misbehaviour, taking over accounts, Magnetic strip manipulation, fake cards and so on. The trend of these kinds of frauds is ever increasing. In the research filed, some techniques have been proposed to identify the frauds. Most of the methods are based on artificial intelligence and machine learning. The survey and analysis of credit card fraud detection can be found in [1-3]. The hidden markov model implementation could be found in [4-6]. In [7-9] authors have used neural network and Bayesian learning to detect credit card frauds. Evolutionary techniques and genetic algorithm is used in [10-12] for the same. This paper

addresses stages required in building artificial neural networkstructure for the problem. It is a challenge to perfectly predict the online transaction fraud, as no method can exactly suspect that the present transaction is fraudulent and is being carried out by an impostor. An impressive Fraud detection system should be able to do the following:

3. 1. Should distinguish the illegitimate transactions quickly.

4. 2. Should not consider legitimate customer as an impostor.

Most of the work related to credit card fraud detection is done after the crime is committed. In this paper a method to detect the fraud during transaction is proposed. The implementation results show 80% accuracy. Since it is based on consumer's behaviour, the system suggests a fraud when the consumer deviates from his regular pattern.

2. CLASSIFICATION OF CREDIT CARD FRAUDS

There are three classes of frauds in particular: card related, dealer related and web related. Some of them are recorded underneath

2.1.Card Related Frauds

1. Application Frauds: This sort of extortion happens when the fraudster controls the application by picking up someone else's sensitive data opens a fake account in his name.

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Research on Reverse Innovation of Performance Appraisal Based on the Methods of Factor Analysis

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Abstract: ***Reverse innovation is a business and innovation model that is contrary to "globalization" and "localization". Reverse innovation has become a new trend of global development strategy of transnational enterprises. This article analyzing the trend of globalization and the emerging market conditions, quantified the innovation path of the enterprise through the method of factor analysis, and establish of the impact factors evaluation model about enterprise reverse innovation. The conclusions of this article can be used to adjust innovation strategy in the process of development, and ultimately achieve the strategic goal of the enterprise.***

Keywords: reverse innovation; globalization; principle composition analysis; factor analysis

1. Introduction

The global growth strategy of transnational enterprises has gone through two remarkable stages: "globalization" and "localization". In the stage of "globalization", enterprises spread their innovation products all over the world through the global network of their own. In the stage of "Localization" , the enterprise study the market with branches all over the world, and perform targeted adjustments on it's innovation ideas and products which fit with local country or region market conditions to better suit the customer demands of the international markets.

(1) Along with the development of economic globalization, multinationals based in developed countries have adopted strategies combined with "globalization" and "localization" targeted at developing nations' market, which R&D activities are conducted in their country's laboratory meeting developing countries demands with appropriate adjustments. This kind of innovation strategy has always been regarded by multinational company as the key to success, which lead to the situation that the spread of innovation all over the world mainly one-way flowed from developed countries to developing countries and even more fringes of the market. In this pattern, developing countries did just play a follower role in a project life cycle during later phases rather than the birthplace of technological innovation and sponsor.

(2) But with the changing environment and competitive landscape of global market, emerging markets has become the focus to gain sustainable global competitive advantage between transnational corporations. Recent years, western countries effective demand is insufficient due to the influence of economic crisis, while many emerging-market nations like China and India maintains a strong momentum of growth, arouse great attentions on transnational corporations. Companies from emerging countries take this opportunity to achieve rapid expansion and fight for the emerging-market consumer demand with transnational corporations. Under the stress of competition multinational companies in developed countries have use the emerging-market as the conducting place of R&D activity. The value position of emerging-market has gradually turns to the global innovation center from follower role in a project life cycle during later phases. More and more corporations have regard developing country as the hot topic in recent research, leverage it's global resource to develop products and services for local demands. Reverse innovation is a kind of innovative route and diffusion model which relevant techniques and products become mature and successful in the local market first, and also succeed when promoting in the opposite direction to developed countries market.

2. Review of Research

Both foreign and domestic scholars have studied reverse innovation at different levels. Govindarajan has did research at what types of innovation emerging-markets can rapid development rises, the diffusion path of reverse innovation and the competitive advantages of local and foreign companies. Shan pointed out the way that reverse innovation successfully extended to developed countries' product markets in his research, at the same time, Shan has conducted an empirical study on this kind of problems, implemented three typical product innovation of reverse innovation in Philips Electronics China Group. Zeschky found that the ability of frugal innovation is the key to reverse innovation through surveys of pharmaceutical and electronic multinationals. Laperche B and Lefebvre G believe that reverse innovation means to achieve local development, and turns out that the result of its innovation including materialized products and services are applicable worldwide. Xing Xiaoqiang and the others have defined the proprietary concept of reverse innovation and other emerging-market innovation in

PERFORMANCE APPRAISAL PRACTICES IN INDIAN BANKS

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Abstract

Banking sector is a fast growing sector of India. With swift expansion in the number of branches and the new functions assigned to them, banks are beginning to feel a new pressure on their organizational abilities i.e. the processes of recruitment, placement, training, promotion and appraisal, in order to ensure that the right number of staff with the right capacities are available at the right time and for the right places. Appraisal is one of the key factors of organizational ability which is also the focus of this study. In simple words we can say that performance appraisal is an analysis of employee's recent successes and failures, personal strengths and weaknesses, and suitability for promotion or further training.

Keywords: *Performance Appraisal, Banking Sectors, Employees feedback.*

1. Introduction :

1.1 Performance Appraisal : Performance appraisal includes all formal procedures used to evaluate personalities, contributions & potentials of group members in a working organization. It is a continuous process to secure information necessary for making correct and objective decisions on employees.

In simple words, performance appraisal is the systematic evaluation of the individual with respect to his performance on the job and his potential for development.

1.2 The essentials of an effective performance system are as follows:

- **Documentation :** Means continuous noting and documenting the performance. It also helps the evaluators to give a proof and the basis of their ratings.
- **Standards / Goals:** The standards set should be clear, easy to understand, achievable, motivating, time bound and measurable.
- **Practical and simple format: -** The appraisal format should be simple, clear, fair and objective. Long and complicated formats are time consuming, difficult to understand, and do not elicit much useful information.

General Application	Specific Purpose
Development Uses	Identification of individual needs Performance feedback Determining transfer and job assignment Identifying of individuals strengths and development needs

A Study Of Impact On Performance Appraisal On Employee's Engagement In An Organization

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Abstract: *The Performance appraisal is one of the most important human resource management practices as it yields critical decisions integral to various human resource actions and outcomes. The purpose of this paper is to explore the relationship between perceptions of performance appraisal fairness and employee engagement in the business organization context.*

In this rapid-cycle economy, business leaders know that having a high-performing workforce is essential for growth and survival. They recognize that a highly engaged workforce can increase inno¬vation, productivity, and bottom-line performance, while reducing costs related to hiring and retention in highly competitive talent markets.

The work climate and job characteristics have a differential effect on employee engagement. Both job and organization resources (performance feedback, autonomy, development opportunities, task variety, welfare, and support from line manager, colleagues and senior management) are linked to positive employee engagement of all types, and might therefore be useful tools for enhancing engagement. Equally, a relatively high level of pressure to produce has a positive effect on employee behaviors.

But while most executives see a clear need to improve employee engagement, many have yet to develop tangible ways to measure and tackle this goal. However, a growing group of best-in-class companies say they are gaining for its competitive advantage through establishing metrics and practices to effectively quantify and improve the impact of their engagement initiatives on overall business performance.

The survey found that many companies find it challenging to measure engagement and tie its impact to financial results: fewer than 50 percent of companies said that they are effec¬tively measuring employee engagement against business performance metrics like cus¬tomer satisfaction or increased market share. A significant gap appeared between the views of executive managers and middle managers in this area. Top executives seemed much more optimistic about the levels of employee engagement in their companies, making them seem out of touch with middle management's sense of their front line workers' engagement.

The Research is to getting Connection towards engagement to the business performance requires considerable effort and top management focus to a large degree, with enormous opportunity available to utilze for better function of companies.

Keywords: *Performance appraisal,* **Procedural** *justice,* **Distributive** *justice,* **Informational** *justice, Employee engagement, Performance management,*

1. INTRODUCTION

Employee engagement has emerged as a potentially important employee performance and organizationalmanagement subject (Endres G. M. & Mancheno-Smoak, 2008; Karatepe, 2009;

Karatepe et al., 2012; Robinson et al., 2004). A growing body of evidence supports the relationship between the engagement of an employee atwork and hotel organizational outcomes (Simpson, 2009), inclusive of those which are performance based. Eventhough the practitioners and researchers tout engagement as important work related factors, the efinitions andmeasurements of an engagement at work, and more specifically food and beverage service engagementemployees, are poorly understood (Leeet al., 2011; Liet al. , 2012). Therefore, it is reasonable to state that toachieve competitive advantage, organizations need to request human resources to set up a plan for bothemployee engagement and commitment (Cristina de Melloe Souza Wildermuth. & Pauken., 2008; Gruman &Saks, 2011; Osman M. Karatepe, 2012; Simpson, 2009). Recently there has been a vast concern to engageemployees. Several studies have claimed that employee engagement expects employee outcomes, financial performance and organizational success (Basbous, 2011; Ellinger et al.; Medlik & Ingram, 2000). Employeeswho are engaged are more likely to stay with their current organization and stay committed to their organization(Bakker et al., 2012; Cristina de

Studies On Physicochemical Parameters To Assess The Water Quality Of River Ganga For Drinking Purpose In Haridwar District

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ABSTRACT
A systematic study has been carried out to assess the water quality index of River Ganga in Haridwar District. 90 water samples from five sampling stations were collected and analysed for physico-chemical parameters (Temp, velocity, pH, dissolved oxygen, free CO2, C.O.D., B.O.D., Carbonate, Bicarbonate, total alkalinity, hardness, turbidity, calcium, magnesium, sodium, potassium, nitrate, phosphate, chloride, sulphate, electrical conductivity, total dissolved solids and total suspended solids.)
The study area experiences a seasonal climate and broadly divided into three seasons as winter (November to February), Summer (March to June) and rainy (July to October). The samples were collected and analysed for two consecutive years 2007 and 2008. Each parameter was compared with the standard desirable limit of that parameter in river water as prescribed by different agencies.
The analytical data of various physicochemical parameters indicates that some parameters like pH, electrical conductivity, total dissolved solids , total suspended solids, turbidity and sodium are found to be in excess than the prescribed limit in some water samples of the study areas. The WQI value indicates that water samples of some sampling stations are quite unfit for drinking purpose because of high value of dissolved solids and sodium. It was also observed that the water in the year 2007 was of a better quality than in the year 2008. Suitable suggestions were made to improve the quality of river water.
Key words: Water pollution, Ganga river water, physicochemical analysis, Water quality index, potability.

1. INTRODUCTION

Pollution of a river first affects its chemical quality and then systematically destroys the community disrupting the delicate food web. Diverse uses of the rivers are seriously impaired due to pollution and even the polluters like industry suffer due to increased pollution of the rivers. River pollution has several dimensions and effective monitoring and control of river pollution requires the expertise from various disciplines[1].Pollution of river is a global problem. In India it is reported that about 70% of the available water is polluted. The chief source of pollution is identified as sewage constituting 84 to 92 percent of the waste water. Industrial waste water comprised 8 to 16 percent.
The indiscriminate and large scale deforestation and over grazing in the watershed areas of river basins have caused soil erosion resulting in considerable silting of dams and shrinkage of river flows. This leads to the flooding of the rivers at the time of excessive rains[2]. The disposal of waste leads to contamination of river and lakes chronically affecting the flora and fauna. According to surveys carried out on selected stretches of important rivers, it has been found that most of the rivers are grossly polluted. The domestic sewage discharged from a population of about 2 millions gives rise to numerous water -borne diseases like typhoid, cholera, dysentery, poliomyelitis and cysticercosis, thereby affecting the human health and deterioration of the water quality[3]. Ganga, the mighty Indian river originates from the snowed peaks of Himalayas, is the lifeline of millions of Indians. From its source to its entry in to the Bay of Bengal, it travels a distance of around 2525 Kms. The river with its well knit tributaries drains the Ganga Basin

which encompasses an area of more than a million square kilometers. (1060,000 sq km)spread over four countries- India, Nepal, Bangladesh and China[4].

Hardwar is a city in Northern India on the bank of the Ganga River north east of Delhi. It is a Hindu pilgrimage centre. Hardwar lies along the Ganga River at the boundary between the Indo-gangetic plain (South) and the Himalayan foothills (North). The water supply of the Ganga system is partly dependent on the rains brought by the monsoon winds from July to October as well as on the flow from melting Himalayan glaciers in the hot season from April to June. The religious importance of Ganga may exceed than that of any other river in the world.
For this study, the water samples were collected from five spots. Sampling station A (Bhooma Niketan), sampling station B (Jai Ram Ashram), Samping station C (Har-Ki-Pauri), sampling station D (Prem Nagar Ashram) and sampling station E (Pul Jatwara) .

Sampling station A is situated in the north of Haridwar. The stream of the Ganga is separated from Malviya point and flows through Kharkhari via Jai Ram Ashram (sampling station B) and confluenced with second stream of Ganga river on the left side of Pant Dweep of Har-Ki-Pauri (sampling station C) . A number of pilgrims take their holy dip here, and their number is

An Efficient Model for Stock Price Prediction using Soft Computing Approach

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Abstract: Analysis and prediction of stock market is very interesting as this helps the financial experts in decision making and in turn profit making. In this paper an Adaptive Neuro-Fuzzy Inference System (ANFIS) model is initially considered for stock market prediction and its result is compared. The substance of the design of Adaptive Neuro-Fuzzy Inference System (ANFIS) can be seen as an optimization problem to find the best parameters with minimal error function. This proposed scheme proposes a combination of the Firefly Algorithm and Adaptive Neuro-Fuzzy Inference System. The fuzzy neural network model will be trained by the Firefly Algorithm, and applied to predict stock prices in the Vietnam Stock Market. The experiments will compare performance between the proposed system and ANFIS trained by the Hybrid Algorithm, Back Propagation and Particle Swarm Optimization (PSO). The experimental results show that the system has reasonable efficient performance. In this thesis Adaptive Neuro-Fuzzy Inference System (ANFIS) model is initially considered for stock market prediction and its result is compared. These techniques were tested with published stock market data of National Stock Exchange of India Ltd. for validation.

Keywords: Anfis, Soft Computing, Prediction, Stock Market.

1. INTRODUCTION

A stock market is a public market for companies for people to raise money. Stock market helps companies to buy or sell their shares. The price of shares depends upon the demand and supplies of shares. This process of buying and selling of shares is called trading; only the Listed Companies are allowed to carry out trading. Stock market prediction is the process of trying to determine the future stock value of a company. The successful prediction of a stock's future price could yield significant profit. Stock price movements are governed by the theories random walk hypothesis and efficient-market hypothesis [1] [2].

The Forecasters of stock market focus on developing approaches which successfully forecast/predict stock prices using well defined trading strategies. A successful prediction model is the one which works with best accuracy having minimum input requirements and least complex model. Investors and government organizations rely on forecasting tools to guard against risks and to monitor market situations. For researchers, these serve as a reference for studies of financial issues like pricing of financial derivatives and portfolio selection.

Stock market values are considered to be very dynamic and susceptible to quick changes because of the underlying nature of the financial domain and in part because of the mix of known parameters (Previous Day's Closing Price, P/E Ratio etc.) and some other factors (like Election Results, Rumors, climate etc.) [3]. An intelligent trader would predict the stock price and buy a stock before the price of stock rises, or sell it before its value declines. It is hard to replace the expertise that an experienced trader has gained from his experience but an accurate prediction algorithm can directly result into high profits for investment firms, individual professionals, which indicates a direct relationship between the accuracy of the prediction algorithm and the profit made from using the algorithm.

2. RELATED WORK

A lot of research has been done and models based on a range of intelligent soft computing techniques are developed over the last two decades. This section describes brie y some of the work that has already been done in the field of stock price prediction.

In technology major Fujitsu and investment Company, Nikko Securities joined hands to develop a stock market prediction system for TOPIX, Tokyo based stock index, using modular neural network architecture [6]. Various economic and technical parameters were taken as input to the modular neural network consisting of multiple MLP used in parallel.

In 1993 research was done on the effect of change of network parameters of the model using artificial neural network (ANN) with Back propagation on the stock price prediction problem [7]. The paper gives information about the role of the

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Medical Image Processing – An Introduction

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Abstract: *Biomedical image processing has experienced dramatic expansion, and has been an interdisciplinary research field attracting expertise from applied mathematics, computer sciences, engineering, statistics, physics, biology and medicine. Computer-aided diagnostic processing has already become an important part of clinical routine. Accompanied by a rush of new development of high technology and use of various imaging modalities, more challenges arise; for example, how to process and analyze a significant volume of images so that high quality information can be produced for disease diagnoses and treatment. The principal objectives of this course are to provide an introduction to basic concepts and techniques for medical image processing and to promote interests for further study and research in medical imaging processing. We will introduce the Medical Image Processing and summarize related research work in this area and describe recent state-of-the-art techniques.*

Keywords: Data Mining, Classification, Image Segmentation.

1. INTRODUCTION

Medical image processing deals with the development of problem-specific approaches to the enhancement of raw medical image data for the purposes of selective visualization as well as further analysis. There are many topics in medical image processing: some emphasize general applicable theory and some focus on specific applications. We mostly focus on image segmentation and multi-spectral analysis.

Image segmentation:

Image segmentation is defined as a partitioning of an image into regions that are meaningful for a specific task; it is a labeling problem. This may, for instance, involve the detection of a brain tumor from MR or CT images (Fig. 1). Segmentation is one of the first steps leading to image analysis and interpretation. The goal is easy to state, but difficult to achieve accurately

Figure 1: A 3D rendering of segmented skin surface (pink), brain tissue(brown), major blood vessels (navy-blue), and a tumor (green) from MRIvolume. This allows surgeons to visualize the actual location and to plan and simulate specific procedures.

2. CLASSIFICATION OF IMAGE SEGMENTATION

Image segmentation approaches can be classified according to both the features and the type of techniques used. Features include pixel intensities, edge information, and texture, etc. Techniques based on these features can be

Adaptive Filtering and Artificial Intelligence Methods on Fetal ECG Extraction

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Abstract
Above 30 percent of infant's death occur due to heart problem like congenital heart disease during 2004 in United States of America. Every year, one in 125 infants is born with heart imperfection. To address these problems, early identification of cardiac anomalies and consistent monitoring of fetal heart can support Pediatric Cardiologist and Obstetrics to take necessary care on time to prescribe medicines and take precautionary measures during gestation period, delivery and/or after birth. Majority of cardiac abnormalities contain some symptoms in the cardiac electrical signal morphology. Electrocardiography gives more information in measuring cardiac signals compare to sonographic measurement. However, in non-invasive heartbeat recording by fetal Electrocardiogram (ECG) application Electrocardiography has its limitation due to low signal- noise ratio where impeding bio-signals are too stronger than fetal electrocardiogram signals. Various adaptive filtering and Artificial intelligence techniques are applied to solve this complex problem. The complex real world problems need a combination of knowledge, skills, and techniques from various sources as an intelligent system. That intelligent system should possess expertise of human, adjust itself to changing environment and learn to improve on its own.

Keywords: Artificial Intelligent, Adaptive Filter, Adaptive Neuro-Fuzzy Inference System (ANFIS), Kalman filtering (KF).

1. INTRODUCTION

Fetus health condition is monitored by many methods where Electrocardiography is one of the frequently used methods which shows the fetus heart's electrical activities.

Generally, an invasive or non-invasive method of recording of Fetal ECG (FECG) is performed. In invasive method of recording, the electrode has to be placed on the scalp of the fetus to measure the ECG but the electrode has to be passed through mother's womb which creates difficulties to the mother [1] and also possible only at the later stage of pregnancy period. The non-invasive method of recording does not provide any trouble to the mother because the electrode has to be placed on mothers' abdomen to measure the ECG of the fetus.

There are several approaches proposed to record the fetal ECG under non- invasive method which uses either a single lead or two leads or multiple leads. For a single lead method of recording, only one electrode is positioned on the mothers' abdomen, two lead systems uses two electrodes which have to be positioned on the chest and abdomen and multiple lead systems require multiple electrodes to record the fetal ECG.

There are several complications in non-invasive method of recording fetal ECG, because the recording is not directly taken from the fetus which is measured on the abdomen, hence the fetal ECG is to be extracted from signal contaminated by multiple sources of interferences. Apart from these sources of interferences the low signal level of fetal ECG [2] and the spectral overlapping of mother ECG and fetal ECG [3] makes the extraction more critical.

2. MATERIALS AND METHODS

Adaptive Filter based Methods

Generally, an adaptive filter has the ability of self-adjusting its weight towards minimization of error. In this technique recorded signals from more than one channels utilized to extract the fetal ECG components recorded at

ECG Feature Extraction Techniques - A Survey Approach

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***Abstract*—ECG Feature Extraction plays a significant role in diagnosing most of the cardiac diseases. One cardiac cycle in an ECG signal consists of the P-QRS-T waves. This feature extraction scheme determines the amplitudes and intervals in the ECG signal for subsequent analysis. The amplitudes and intervals value of P-QRS-T segment determines the functioning of heart of every human. Recently, numerous research and techniques have been developed for analyzing the ECG signal. The proposed schemes were mostly based on Fuzzy Logic Methods, Artificial Neural Networks (ANN), Genetic Algorithm (GA), Support Vector Machines (SVM), and other Signal Analysis techniques. All these techniques and algorithms have their advantages and limitations. This proposed paper discusses various techniques and transformations proposed earlier in literature for extracting feature from an ECG signal. In addition this paper also provides a comparative study of various methods proposed by researchers in extracting the feature from ECG signal.**

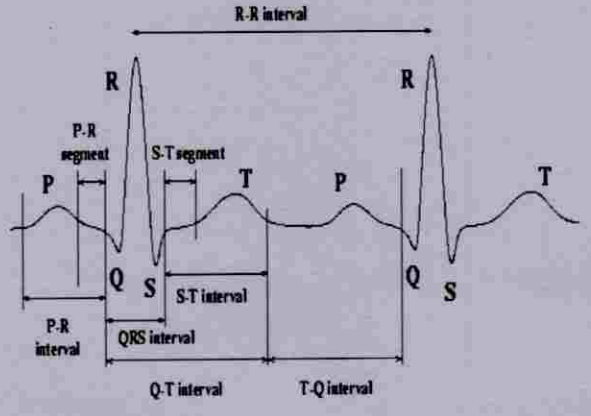
Keywords*—*Artificial Neural Networks (ANN), Cardiac Cycle, ECG signal, Feature Extraction, Fuzzy Logic, Genetic Algorithm (GA), and Support Vector Machines (SVM).

1. INTRODUCTION

The investigation of the ECG has been extensively used for diagnosing many cardiac diseases. The ECG is a realistic record of the direction and magnitude of the electrical commotion that is generated by depolarization and re-polarization of the atria and ventricles. One cardiac cycle in an ECG signal consists of the P-QRS-T waves. Figure 1 shows a sample ECG signal. The majority of the clinically useful information in the ECG is originated in the intervals and amplitudes defined by its features (characteristic wave peaks and time durations). The improvement of precise and rapid methods for automatic ECG feature extraction is of chief importance, particularly for the examination of long recordings [1].

The ECG feature extraction system provides fundamental features (amplitudes and intervals) to be used in subsequent automatic analysis. In recent times, a number of techniques have been proposed to detect these features [2] [3] [4]. The previously proposed method of ECG signal analysis was based on time domain method. But this is not always adequate to study all the features of ECG signals. Therefore the frequency representation of a signal is required. The deviations in the normal electrical patterns indicate various cardiac disorders. Cardiac cells, in the normal state are electrically polarized [5].

ECG is essentially responsible for patient monitoring and diagnosis. The extracted feature from the ECG signal plays a vital in diagnosing the cardiac disease. The development of accurate and quick methods for automatic ECG feature extraction is of major importance. Therefore it is necessary that the feature extraction system performs accurately. The purpose of feature extraction is to find as few properties as possible within ECG signal that would allow successful abnormality detection and efficient prognosis.



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Review: Analysis of EEG Signal based Brain-Computer Interface

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Abstract: ***In this paper we propose the literature review related to the analysis of EEG Signal based Brain-Computer Interface. One of the main objectives of this survey paper is to find the features extraction used in EEG-based BCI research and to identify their critical properties. Another objective is to provide novel approach in order to help the reader with choosing the most appropriate Classification Algorithms for EEG-based Brain-Computer Interfaces.***

Keywords: Brain Computer interface, Neurosurgical Issues of BCIs, Preprocessing and Feature Selection, classifiers.

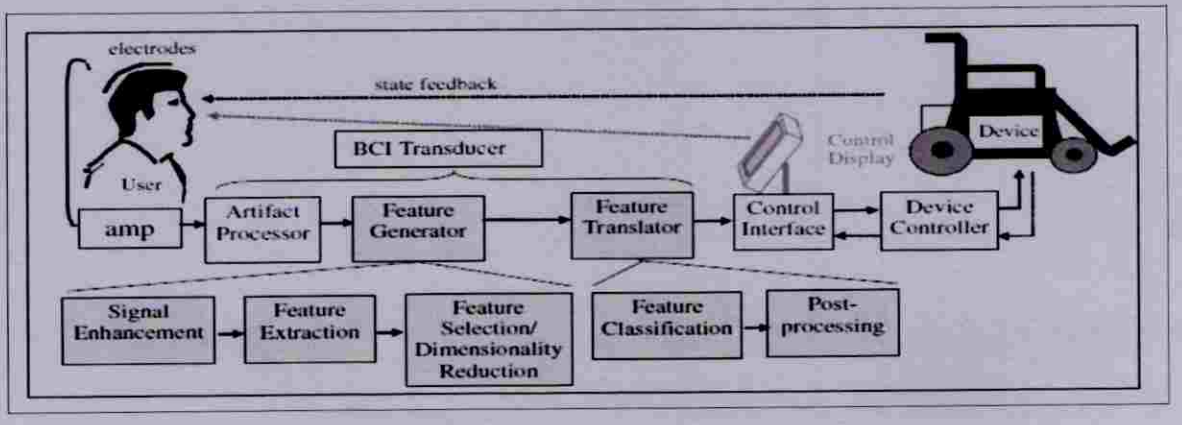
1. INTRODUCTION

Electroencephalograph (EEG) is an instrument for recording the electrical activity of the brain by suitably placing surface electrodes on scalp. EEG, describing the general function of the brain activity, is the superimposed wave of neuron potentials operating in a non-synchronized manner in the physical sense.

1.1 Brain Computer Interface

A Brain Computer Interface (BCI) is a direct communication pathway between brain and computer. BCI system measures the specific features of brain activity and translates them into device control signals. Electroencephalography (EEG) is an electrical signal recorded from a person's scalp, and is used to monitor the neurological state of the patient. EEG signal analysis and classification is one of the prominent researches in the field of Brain Computer Interface [2]. Electroencephalography (EEG) isthe recording of electrical activity along the scalp produced by the firing of neurons within the brain. In clinical contexts, EEG refers to the recording of the brain's spontaneous electrical activity over a short period of time, usually 20–40 minutes, as recorded from multiple electrodes placed on the scalp [5].

Brain rhythm Many neurological disorders can be easily identified by brain rhythms which can be easily recognized by visual inspection of the EEG signal. The clinical applications using EEG are to characterize the seizures, to monitor the depth of anesthesia and to locate areas of damage following head injury, stroke, tumor, etc. Indeed, EEG is portable, non-invasive, relatively cheap and provide signals with a high temporal resolution.



Human Resource Management in Organized Retail Industry in India

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Abstract

The success of an organization largely depends on its Human Resource. Human Resource Management (HRM) plays a vital role in achieving the organizational objectives. The retail sector has played a phenomenal role in India with tremendous contribution to the Indian economy. Retailing sector has been observing tremendous changes with the entry of organized retail companies. The organized retailing in India is undergoing a metamorphosis and is expected to scale up to meet international standards. In this world of cut throat competition the need for effective HRM practices has been increasing rapidly. In order to face this tough competition of global economy, the organized retailers in India have started to realize the need for efficient manpower and hence, strengthening their business with the help of HRM activities. The HRM practices, therefore, have become their prime concern. The present paper is an attempt to analyze the HRM practices implemented in the organized retail sector in India. The study also throws light on the Human Resource (HR) challenges faced by the sector and suggested measures to improve the work culture in Indian scenario.

Keywords: Human Resource Management, Retail Sector, Organized Retailing, HRM Practices and HR Challenges.

1. Introduction

Human Resource Management (HRM) is the organizational function that deals with issues relating to people such as compensation, hiring, performance management, safety, benefits, employees motivation, communication, administration and training.

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