Original Article

Assembly Supply Chain Topology Development Metrics and a Complexity Scale

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Abstract: Assemblage supply chain (ASC) networks may be conceptually modeled using the methodology presented in this article. Depending on the number of initial providers, models of these ASC networks are categorized. We summarize some of the works written on structural complexity in assembly systems. The next step is to apply the so-called Vertex degree index to ASC networks in order to measure their structural complexity. Because of its foundation in the Shannon entropy, this metric works well in this context. At last, we provide an ASC Networks-specific generic model of quantitative complexity scale.

Introduction

Assembly supply chain (ASC) systems are becoming increasingly complex due to technological advancements and the use of geographically diverse sources of parts and components. One of the major challenges at the early configuration design stage is to make a decision about a suitable networked manufacturing structure that will satisfy the production functional requirements and will make managerial tasks simpler and more cost effective. In this context any reduction of redundant complexity of ASC is considered as a way to increase organizational performance and reduce operational inefficiencies. Furthermore, it is known that higher complexity degree of ASC systems makes it difficult to manage material and information flows from suppliers to end-users, because asmall changes may lead to a massive reaction. Nonlinear systems that are unpredictable cannot be solved exactly and need to be approximated. One way to approximate complex dynamic systems is to transform them into static structural models that could be evaluated with graph-based methods. Thus, structural complexity approaches that assess topological properties of networks are addressed in this paper. Structural complexity theory is a branch of computational complexity theory that aims to evaluate systems' characteristics by analysing their structural design. In structural complexity the main focus is on complexity classes, as opposed to the study of systems behaviour to be conducted more efficiently. According to Hartman is [1]: "structural complexity investigates both internal structures of complexity classes, and relations that hold between different complexity classes". In this study our main intent is to identify topological classes of assembly supply chains (ASC). Our approach to generate classes of ASCs is based on some specific rules and logical restrictions described in Section 3. Subsequently, in Section 4, we present a method to compute the structural complexity of such networks. Finally, in the Conclusions section, the main contributions of our paper are mentioned.

Automated Image Captioning: Harnessing Machine Learning for Image Description Generation

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Abstract:- Advancements in computer vision have led to its widespread application across various domains. This project focuses on a specific aspect of computer vision: image captioning. While generating descriptive language for images remains a challenging task, recent research has made significant progress, particularly in the realm of still images. Although earlier efforts primarily concentrated on video content, there has been a shift towards enhancing image descriptions using natural language understandable to humans. Our project aims to leverage convolutional neural networks (CNNs) and explore various hyperparameters using extensive datasets such as Flickr8k and ResNet. By combining the outputs of these image classifiers with recurrent neural networks (RNNs), we seek to generate accurate captions for images. This paper provides a comprehensive overview of the architecture and methodology employed in our image captioning model.

Keywords:- Computer Vision, Convolutional Neural Network (CNN), Recurrent Neural Network (RNN), Xception, Flicker 8K, LSTM, Preprocessing.

I.   INTRODUCTION

In the past few years the field of AI namely Deep Learning has developed a lot because of its impressive leads to terms of accuracy in comparison with the already existing Machine learning algorithms. It might be a difficult task to get a meaningful sentence from an image but if done successfully, it can have a huge impact, as an example helping the visually impaired to possess a better understanding of images.

Image captioning is considered a bit more difficult in comparison with image classification, which has been the main focus point within the computer vision community.

The task to find the relationship between the objects in the image is the most important factor to consider. In addition to the visual understanding of the image, the above semantic knowledge has got to be expressed during a tongue like English, which suggests that a language model is required.

The attempts made within the past have all been to stitch the both two models together.

In the model proposed we attempt to combine this into one model which consists of Convolutional Neural Network (CNN) encoder which usually creates image encodings. We use the Xception architecture with some modifications. These encodings are then passed to a LSTM network layer which are a kind of Recurrent Neural Network. The specification used for the LSTM network add similar way because the ones utilized in machine translators. We then use Flickr8k dataset to train and coach the model. The model generates a caption as an output that is to be supported by the dictionary which is formed from the tokens of caption within the training set.

II.   PROBLEM DEFINATION

Image caption generation has been considered as a challenging and significant research area that is constantly following advancements in statistical language modelling and image recognition system. Caption generation can benefit many like helping the visually impaired by aiding them by enabling automatic captions of

DESIGN AND STRUCTURAL ANALYSIS OF AN AGRICULTURAL ROBOTICS PLATFORM

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Abstract: *Many advances in technology have made the agriculture business a much less labor intensive industry to be a part of. If we think back even only 50 years, farmers were just beginning to incorporate technologies into their farming techniques. It has been said that individuals that are involved in the farming industry are some of the least susceptible to change. They are very set in the ways of those came before them. When we take a look at the farming industry now, we can see that this is rapidly changing. Farmers are looking for new ways to implement technology to cut costs and reduce labor hours. One of the ways that farmers are beginning to explore new technologies in farming come from the Agribot. This is something new to the agriculture industry, but is quickly gaining popularity from agriculture research companies around the country. These Agribot are described by Farm Industry News as an Agribot that drives it's solving with a computer in control. Although still in the research phase of development, Agribot are rapidly becoming more of a reality than an idea. The Agribot is controlled by a wireless communication system. This can be moved forward and reverse direction using DC motors. Also this robot can take sharp turnings towards left and right directions. Most of the cases the things done during farming are plough, watering and seeding. For performing all these operations lot of manpower is needed. So, by using Agribot all these things can be done with ease. Without much manual effort, by simply pressing switch using wireless communication corresponding action can be performed. This project is about frame and load calculation and dimensioning, of the elements. For the determination of forces on the elements, models and drawings are to be made in CAD software like Catia and analysis by Ansys software. The quality mesh is prepared for converged solution and the solver set as analysis package with high optimizing results. The resultant calculation process can be used for designing the geometry and determination of the properties.*

I- INTRODUCTION

Automation or automatic control is the use of various control systems for operating equipment such as machinery, processes in factories, boilers and heat treating ovens, switching in telephone networks, steering and stabilization of ships, aircraft and other applications with minimal or reduced human intervention. Some processes have been completely automated.

An agricultural robot or agribot is a robot deployed for agricultural purposes. The main area of application of robots in agriculture is at the harvesting stage. Fruit picking robots, driverless tractor / sprayer, and sheep shearing robots are designed to replace human labor. The agricultural industry is behind other complementary industries in using robots because the sort of jobs involved in agriculture are not straightforward, and many repetitive tasks are not exactly the same every time. In most cases, a lot of factors have to be considered (e.g., the size and color of the fruit to be picked) before the commencement of a task. Robots can be used for other horticultural tasks such as pruning, weeding, spraying and monitoring. Robots can also be used in livestock applications (livestock robotics) such as milking, washing and castrating.

The biggest benefit of automation is that it saves labor; however, it is also used to save energy and materials and to improve quality, accuracy and precision. The term automation, inspired by the earlier word automatic (coming from automaton), was not widely used before 1947, when General Motors established the automation department. It was during this time that industry was rapidly adopting feedback controllers, which were introduced in the 1930s.

OPTIMIZATION AND DESIGN OF PETROL ENGINE FLYWHEEL FOR VARIABLE SPEEDS

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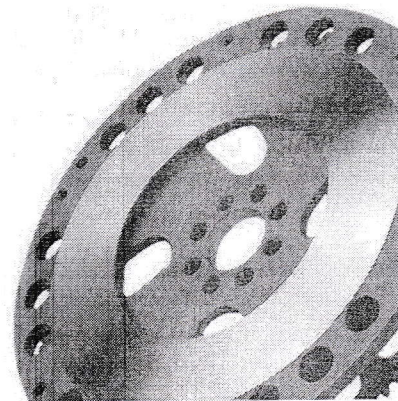[*1,2] Associate Professor, Dept. of Mechanical Engineering,

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Abstract: A flywheel used in machines serves as a reservoir which stores energy during the period when the supply of energy is more than the requirement and releases it during the period when the requirement of energy is more than supply. For example, in I.C. engines, the energy is developed only in the power stroke which is much more than engine load, and no energy is being developed during the suction, compression and exhaust strokes in case of four stroke engines. The excess energy is developed during power stroke is absorbed by the flywheel and releases it's to the crank shaft during the other strokes in which no energy is developed, thus rotating the crankshaft at a uniform speed. The flywheel is located on one end of the crankshaft and serves two purposes. First, through its inertia, it reduces vibration by smoothing out the power stroke as each cylinder fires. Second, it is the mounting surface used to bolt the engine up to its load. The aim of the project is to design a flywheel for a multi cylinder petrol engine flywheel using the different speeds and to analyze to get better results. A 2D drawing is drafted using the calculations. A parametric model of the flywheel is designed using 3D modeling software Catia. The forces acting on the flywheel are also calculated. The strength of the flywheel is validated by applying the forces on the flywheel in analysis software Ansys. Analysis is done for two materials Cast Iron and Aluminum Alloy to compare the results. Catia is the standard in 3D product design, featuring industry-leading productivity tools that promote best practices in design. Ansys is general purpose finite element analysis (FEA) software package. Finite Element Analysis is a numerical method of deconstructing a complex system into very small pieces (of user-designated size) called elements.

I- INTRODUCTION

The flywheel is a cast iron, aluminum, or zinc disk that is mounted at one end of the crankshaft to provide inertia for the engine. Inertia is the property of matter by which any physical body persists in its state of rest or uniform motion until acted upon by an external force. Inertia is not a force; it is a property of matter.

Dr. E. Gooinathan, M.Naga Sireesha, B M. Supraja / International Journal of Management Research & Review

ANALYSIS OF GRAVITATIONAL WAVES

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Abstract: The discovery of gravitational waves, ripples in the fabric of spacetime, represents a monumental breakthrough in astrophysics and cosmology. This abstract offers a concise summary of our extensive research paper titled "Gravitational Waves: Detection, Sources, and Implications for Astrophysics. "The identification of gravitational waves by collaborations such as LIGO and Virgo stands as a pivotal moment in our comprehension of the cosmos. Our study delves into the intricate methodologies employed in gravitational wave detection and the transformative findings enabled by these cutting-edge detectors. We analyze the diverse origins of gravitational waves, including mergers of binary black holes and neutron stars, and their profound implications for astrophysical phenomena. By examining the fusion of compact binary systems as potent generators of gravitational waves, we illuminate the dynamics of these celestial occurrences. Moreover, our paper elucidates the far-reaching consequences of gravitational wave astronomy on both astrophysical and cosmological investigations. It has paved the way for exploring extreme environments, testing fundamental theories of physics, and validating Einstein's theory of general relativity in hitherto unexplored domains. The identification, characterization, and interpretation of gravitational waves have unlocked a new perspective into the concealed universe, providing insights into some of the most mysterious cosmic phenomena. By amalgamating theoretical frameworks with observed gravitational wave signals, we can decipher the mysteries surrounding black holes, neutron stars, and the fundamental nature of gravity itself.

Keywords: Gravitational waves, astrophysics, binary black holes, neutron stars, LIGO, Virgo, general relativity, compact binary systems, cosmic events.

Introduction

The cosmos is a vast tapestry woven with gravitational forces, celestial bodies, and cosmic phenomena, all governed by the laws of physics. For centuries, one of the fundamental aspects of these laws, gravitational waves, remained elusive, hidden from direct observation. Albert Einstein's theoretical insights in 1915 predicted their existence as ripples in spacetime, yet it took until the 21st century for technology and human ingenuity to converge, allowing us to detect these faint whispers from the depths of the universe.

Our research paper, titled "Gravitational Waves: Detection, Sources, and Implications for Astrophysics," encapsulates the essence of a revolution in astrophysics and cosmology.

Dr. A. Nepolraj, Dr. A. Senthilraja, S.K Karimulla / *International Journal of Management Research & Review*

EXPLORING THE FUTURE POTENTIAL OF ELECTROPHORESIS IN SEPARATION TECHNOLOGY RESEARCH

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Abstract: Electrophoretic separation has long been a cornerstone technique in both chemistry and biology, dating back to its first demonstration in 1807. Over the past century, advancements in miniaturization, precision engineering, biochemistry, electrical engineering, and electronics have revolutionized electrophoresis systems, transitioning from rudimentary paper-based setups to sophisticated automated platforms. These advancements have been driven by the need for faster and higher-resolution results. This paper provides an overview of the historical evolution of electrophoresis technology and offers insights into potential future developments. It explores the designs, applications, separation phases, biological implications, and functionalities of electrophoresis systems. The increasing complexity of electrophoresis systems underscores the significant technological progress in this field. By identifying current technological gaps, the paper offers glimpses into the potential future of electrophoresis. Examining the potential benefits and challenges of this seemingly simple separation technology provides both fascination and complexity.

Keywords: Progress, History, Electrophoresis, Development, Future.

IINTRODUCTION

The evolution of electrophoresis throughout history

In 1807, Ruess (Ruess, 1809) conducted an experiment that laid the groundwork for electrophoresis, observing particle movement in a suspension of clay in water when subjected to an electrical current. However, it wasn't until 1942 that Coleman and Miller (Coleman and Miller, 1942) demonstrated the migration of neutral hexose towards the anode in a borax solution, marking the widespread adoption of electrophoresis as a scientific technique. Various experiments were conducted to explore the application and limitations of electrophoresis for separating compounds containing contiguous "-OH" groups and high concentrations of neutral sugars (Smith, 1955; Hashimoto et al., 1942; Foster, 1957). Electrophoresis gained traction for separating DNA and RNA following Consden and Stanier's successful separation of sugars in 1952 (Consden and Stanier, 1952).

In the 1970s, Richards et al. (Richards et al., 1965) conducted significant studies popularizing Tris media as the buffer solution in electrophoresis, including the use of Tris-acetate-EDTA (TAE) and Tris-borate-EDTA (TBE). Danna et al. (Danna and Nathans, 1971) further defined electrophoresis as a technique for DNA analysis by measuring the length and relative molarity of SV40 DNA fragments using restriction enzymes. Ethidium bromide was initially used as a DNA stain, later employed by Aaij and Borst in 1972 to distinguish between circular and linear DNA

REAL TIME AUTOMATION OF AGRICULTURAL ENVIRONMENT FOR SOCIAL MODERNIZATION OF INDIAN AGRICULTURE

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Abstract :- Agriculture is the broadest financial area and plays an important role in the overall economic growth of a nation. India is an agriculture-based country and 75%of a people where live in rural areas. Now a days most of the peoples migrate rural to urban places. Because of the technological development people could not more interest to work with oldest method of farming. So, overcome this problem to go with improved irrigation system in agricultural environments using sensors, GSM and water meter. In this module we can include the light intensity and humidity sensing, GSM, moisture sensor where used to control the motor pumps to automation process. In the implementation of automation is to using the improvement of farming and growth of yield. So, making this model is to sensing the soil moisture level and water levels are indicate to system for automatically switched ON/OFF the motor pumps. It is usage of the less time, electricity conception and involuntarily results in wastage of water. That is the same time to the indicator sending the message to the former for using GSM. The aim of our idea to likely work with forms easily to grow of farming.

INTRODUCTION

In agricultural activities irrigation transportation is most imperative and trivial ground water system, canals, tanks and rain water harvesting. So, the largest system in India was the ground water well-based system. That was a 160 million hectares of urbane lands are in India another 39 million hectare can irrigated by ground water wells and a 22 million hectares by irrigation canals. During 2010 India was constantly irrigated by 35% of agricultural land. Indias 2/3rd cultivated lands are dependent upon the monsoons. Last 50 years the development of irrigation system infrastructure was helped in improvement of food security, monsoons dependency was reduced, create rural job opportunities and agricultural yield was improved. In India we are consumed rice and sugar by forming used for more than 60% water available and two crops reside in 24% of cultivable area for the news report in 2019. Indians soil without caring more for replenish used for growing crops over 1000 years. In the overall world can be almost average amount of yield produced. This is over problem can be solved by using fertilizers and manures. So, irrigation is the most important in agriculture. That is the main think to developing our idea to improve our farming

Embedded Systems:
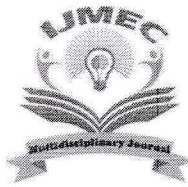
PREDICTIVE TRAFFIC ANALYSIS FOR ADVANCED TRANSPORT SYSTEMS UTILIZING MACHINE LEARNING

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Abstract: Automobile manufacturers have introduced various safety features to mitigate the risk of traffic accidents, yet accidents persist in both urban and rural areas. To enhance safety measures and prevent accidents, accurate prediction models are crucial to identifying patterns associated with different scenarios. Through these models, we can cluster accident scenarios and devise effective safety strategies. Our objective is to achieve a substantial reduction in accidents using cost-effective methods grounded in scientific research. To attain this objective, extensive data on traffic accidents must be collected and analyzed, encompassing factors such as accident location, time, weather conditions, and road features. Leveraging machine learning algorithms, we can automatically discern patterns within the data and forecast accident scenarios based on these patterns. Subsequently, these models can categorize accidents into distinct clusters, enabling the development of tailored safety measures for each category. Through this approach, we can devise efficient safety protocols adaptable to various settings. We are confident that this methodology holds promise in significantly curbing the number of traffic accidents and enhancing safety for drivers, passengers, and pedestrians alike.

Keywords: Machine Learning, Random Forest, Decision Tree, Logistic Regression, Support Vector Machine

1. Introduction:

The availability of precise traffic flow information is essential for various business sectors, government agencies, and individual travellers to make informed decisions regarding their travel routes[1]. The implementation of Intelligent Transportation Systems (ITS) is key to achieving accurate traffic flow prediction and improving traffic management efficiency while reducing carbon emissions[16].

Real-time traffic and historical data collected from diverse sensor sources, such as inductive loops, radars, cameras, mobile Global Positioning System (GPS), crowd sourcing, and social media, are used to predict traffic flow accurately[7]. The explosion of traffic data due to the extensive use of traditional sensors and new technologies has resulted in a vast volume of

ENHANCING THE QUALITY OF BAJAJ PULSAR 150CC IC ENGINE CONNECTING ROD THROUGH THE STUDY OF STRAIGHT LINES AND CURVES

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Abstract: This project mainly deals with the design and analysis of I.C engine connecting rod. Connecting Rod is a component of reciprocating engines, reciprocating pumps, gas compressors and pneumatic cylinders among other similar mechanisms. In an engine, its purpose is to transfer force from expanding gas in the cylinder to the crankshaft via a piston rod. For this project, there are two basic requirements. The first requirement is to design of a model of I.C engine connecting rod as per the standard mathematical calculations. The second requirement is to analyze of I.C engine connecting rod by the method, such as following a track, which consists of straight lines and curves. These systems are done by modeling software's like CatiaV5, and analysis is done by Ansys software. Specifications of a product are detailed in terms of the product size, speed range, weight and power consumption. Here the Connecting rod is designed; analyzed and has been studied. Connecting Rod temperature has considerable influence on efficiency, emission, performance of the engine. Purpose of the investigation is measurement of connecting rod transient temperature at several points on the connecting rod, from cold start to steady condition and comparison with the results of finite element analysis. Even though the program worked well, there were some errors that were identified after testing, resulting in increased performance. In this project work has been taken up on the different aspects of Materials like Magnesium Alloy, Beryllium 25 Alloy and Forged Steel Materials to cover the research gaps to present the results based on the systematic studies through the connecting rod of the engine, FEA analysis of is to measure temperature at the points where it is not possible to find out practically and to observe the heat flow inside the Connecting Rod.

I- INTRODUCTION

Automobile components are in great demand these days because of increased use of automobiles. The increased demand is due to improved performance and reduced cost of these components. R&D and testing engineers should develop critical components in shortest possible time to minimize launch time for new products. This necessitates understanding of new technologies and quick absorption in the development of new products. A piston is a component of reciprocating IC-engines. It is the moving component that is contained by a cylinder and is made gas-tight by piston rings. In an engine, its purpose is to transfer force from expanding gas in the cylinder to the crankshaft via a piston rod and/or connecting rod.

SMART ENERGY METER WITH OVERLOAD PROTECTION AND ALERT SYSTEM

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Abstract: Advancements in automation are revolutionizing our surroundings and simplifying our lives. Our concept revolves around developing an automated electricity billing system to enhance daily life convenience. The primary objective is to design a system that automatically generates electricity bills. The entire module will monitor electricity consumption, with an Arduino microcontroller unit employed to track all units consumed. Users will have the flexibility to set a predetermined load value, and if this limit is exceeded, they will receive a notification on the LCD display indicating "system overload" for that phase. This alerts users to their load status, empowering them to manage their usage effectively. Our prototype offers two key advantages: users can define an energy threshold, and they are promptly notified if this threshold is surpassed. This not only benefits users but also the electricity provider by promoting efficient energy management. Additionally, the meter will trip in cases of high energy consumption, thereby enhancing safety for domestic users.

Keywords: Arduino micro-controller, Arduino IDE, Energy Meter, LCD, GSM Module.

Introduction

In the early phase of household technology, delivery of electricity is completely depended on traditional energy meters. These meters play a key role in measuring the consumption of electrical energy in individual households. The usage of these meters has been slowly declining with the improvement in technology as fast changes has been made to encounter the problems occurred by the traditional meters.

Problem Description

The major problem arises when habitants are unaware of their daily behavior. Monthly feedback given to the consumers is not sufficient as the consumers will not have knowledge on how much energy does the individual appliances consume. To overcome the problems of traditional electricity meters, electronic meter or static energy meter comes in picture. Now a day's, technology is developing rapidly. High automated and secured systems are preferred in all fields including electricity distribution. Energy is the prime mover of economic growth and is vital to the sustenance of modern economy. Future economic growth crucially depends on the long term availability of energy from its sources.

Scope

The "Smart Electric Energy Meter" mainly aims at the middle class and the lower class family to bring their electricity bill down with the help of the power consumption alert system. It benefits the government as it is helps in reducing the power consumption and succeeding can reduce the unusual power usage. Energy meters being deployed at homes are used for reading the power that is being consumed. Each consumer may fix a customized threshold value (unit). If the value reaches above the threshold, it will alert to the consumer by sending massage. This system may install at any place where the energy consumption should be regularly monitored and controlled. The consumers can fix their own

DEVELOPING A SHIFT REGISTER INCORPORATING PULSED LATCHES TO ENHANCE LOW POWER CONSUMPTION AND AREA EFFICIENCY

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Abstract: Proposing a low-power and area-efficient shift register design using pulse latches, this project offers an innovative approach to minimize both the area and energy consumption. By replacing flip-flops with pulse latches, the design achieves reductions in both area and power consumption. Unlike conventional designs relying on a single clock signal, this system employs a set of non-overlapping delayed clock signals to address the timing issue between pulse latches effectively. By distributing the latches among a small number of sub-shifter registers and employing a mechanism of temporary storage latches, the shift register significantly reduces its dependence on clock signals. For the implementation, a 256-cycle shift register with pulse latches was designed using a 0.18μm CMOS process with VDD = 1.8V. The area footprint was minimized to 6600 sq. ft., while achieving a power consumption of 1.2mW at a clock frequency of 100 MHz. Comparative analysis revealed that the proposed shift register design could potentially save up to 37% of the required area and 44% of the required power compared to a conventional flip-flop-based shift register. In essence, a shift register comprises a series of flip-flops or pulse latches operating with the same clock signal, wherein the output of each element is connected to the "data" input of the subsequent element. This configuration enables the circuit to shift the stored data by one position upon each clock transition, thereby shifting in new data at the input and releasing the last bit in the sequence. Additionally, shift registers can be designed with multiple stages to accommodate larger data sets, enabling parallel operation for increased efficiency.

Keywords: Shift registers, Flip-flop, Pulsed latches, Low power, Efficient area

INTRODUCTION

A shift register is the central design block in a VLSI circuit. Move registers are usually used in various applications, for instance, modernized channels, correspondence authorities, and picture planning ICs, Starting late, as the size of the image data continues extending on account of the interest for great picture data, the word length of the shifter register additions to deal with tremendous picture data in picture planning ICs. Image extraction and vector age VLSI chip use a 4K-piece move register. A 10-digit 208 channel yield LCD fragment driver IC uses a 2K-cycle move register. A 16-megapixel CMOS picture sensor uses a 45K-piece move register. As the word length of the shifter register assembles, the zone and power use of the move register become huge arrangement considerations.

The design of a move register is clear. An N-digit move register is made out of game plan related N data flip-flops.

The speed of the flip-flop is less huge than the region and power use because there is no circuit between flip-flips in the move register. The smallest flip-flop is fitting for the move register to reduce the zone and power use. Starting late, beat snares have displaced flip-flops in various applications, considering the way

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Original Article

Using a Solver to Build Lyapunov Functions for Positive-Dimensional Polynomial Systems

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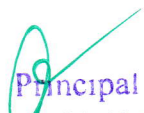Professor[1] , Assistant Professor[2,3]

Introduction

It is essential to take dynamical system stability into account while studying and designing control systems. For linear systems, verifying that equilibria are stable is a piece of cake. Proving that nonlinear dynamical system equilibria are stable is harder than proving it for linear systems. At equilibrium, we may use the Lyapunov function to check for stability. For a system of autonomous polynomial differential equations, the main question is how to get the Lyapunov function at equilibrium. There was a shift in focus from computing the Lyapunov function to eliminating quantifiers in the works [1, 2]. One limitation of this approach is that the computing complexity for quantifier elimination is proportional to the total number of variables, which is twice as difficult. In order to answer these inequalities, the symbolic solution given by She et al.[3] constructs a particular semialgebraic system using the local properties of a Lyapunov function and its derivative. Then, they use CAD, a method originally suggested by Collins in [4], to this system. The method described in [5] finds the Lyapunov function using semidefinite programming. Additional algorithms are also available. In this study, we assume that the Lyapunov function has a quadratic shape and that certain of its coefficients are unknowable. Using the method described in [3], a few positive polynomials are first created, and then a positive dimensional polynomial system is built by including a few extra variables. By utilizing a numerical approach to solve the real root of the positive dimensional system, the parameter in the Lyapunov function is calculated. The rest of this paper is organized as follows: Definitions and preliminaries about the Lyapunov function and the asymptotic stability analysis of differential system are given in Section 2. Section 3 reviews some methods for solving the real root of positive dimensional polynomial system. The new algorithm to compute the Lyapunov function and some experiments are shown in Section 4. In Section 5, some examples are given to illustrates the efficiency of our algorithm. Finally, Section 6 draws a conclusion of this paper.

Stability Analysis of Differential Equations

In this section, some preliminaries on the stability analysis of differential equations are presented.

In this paper, we consider the following differential equations:

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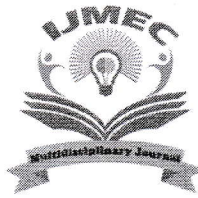
Wireless Sensor Networks (WSNs) for Parking Space Management System

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Abstract : In the realm of traffic management systems, a sophisticated parking system has been developed to reduce the cost of employing personnel and optimize resource utilization for vehicle parking lot owners. Currently, the conventional method of finding a parking space is manual, where drivers typically rely on luck and experience to locate a spot on the street. This process is time-consuming and may lead to the worst-case scenario of failing to find any parking space, especially in densely populated urban areas. An alternative approach is to locate a designated parking lot with high capacity. The underlying paper presents a system model with remote access using an open-source physical computing platform based on Arduino with IR sensor technology, integrated with a smartphone for communication and user interface. This setup allows both the control system and vehicles to verify the feasibility of finding a free parking spot using internet and cloud technology.

Keywords:- Raspberry pi, IR sensors, Zigbee correspondence

I. Introduction

Since individuals and vehicles are sharing the road, crosswalk expands reasonability of utilizing the road in the really thought region. Regardless, as individuals develop, this brings progressively ceaseless setbacks and dynamically genuine wounds, and therefore, nationals are trying to reduce these disasters by making types of progress and genuine supports. Such activities pull down the complete number of lethal disasters yet shockingly, the number of individuals by walking fatalities doesn't decrease for quite a while. To be explicit, this misfortune doesn't have a close to reserve considers to others. An appraisal around 2014 in the USA displays fatalities in 78% happened in metropolitan, 71% happened at non-crossing centers and 72% happened thoughtlessly. Through this evaluation, individuals by walking fatalities are deducing an overwhelmingly populated region makes continuously gave make a disaster and an average assertion makes less opportunity to perceive a bystander or a vehicle. As the Wireless Sensor Networks have precisely developed even more rapidly and even more capably, they have become the key hotspot for the progression of IoT. They find application in for all intents and purposes all domains including insightful organization, sharp transportation systems, splendid home, keen crisis facilities, and so on The achievement of the above lead to the smart city improvement as referred to by our Indian Prime Minister. The chance of the web of things (IoT) was made in relating to WSNs. The term web of things was brought about by Kevin Ashton and insinuates exceptionally conspicuous articles and their virtual depictions in a "web-like" structure. These articles may go from epic structures, planes, vehicles, machines, such a product, organizations, to individuals, animals and plants, and even their specific body parts. One

EARTHQUAKE ANALYSIS ON MULTISTOREY BUILDING

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ABSTRACT:

High rise structures are commonly influenced by sidelong loads and are vulnerable against seismic forces. One of the essential drivers for disappointment of structures is their characteristic (either plan irregularity or vertical anomaly) and improper examination of high rise steel structures. As it is known different methodologies are available for the associate examination of structures and other partner organizing structures under seismic activities. The contrasts between the methods lie in the manner how they combine the seismic data and in the justification of the structure. In this examination the purpose is to separate the response of a high rise structure to ground progress using Response Spectrum Analysis. In this method bay frame model structure and shear divider packaging are considered in Staad Pro. In like manner change in the time span, persistence, base shear are done by maintaining a strategic distance from structure is watched and examined.

Keywords: STAAD Pro, Seismic analysis, Shear divider.

1. INTRODUCTION:

A huge segment of India is defenceless to harming levels of seismic risks. Henceforth, it is important to consider the seismic burden for the plan of tall structure. . The different sidelong weight burden opposing frameworks utilized in elevated structure are: 1.Bare casing 2.Brace casing 3.Shear divider outline. In tall structure the sidelong loads because of seismic tremor involve concern. These level forces can make principal problems in the structure, initiate unwanted worries in the structure, create bothersome vibrations or cause unnecessary sidelong influence to the formation.

Experimental Study on Partial Replacement of Sand with Glass Powder as Fine aggregate in Concrete

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Abstract: Disposal of more than 300 tones waste glass daily derived from post-consumer beverage bottles is one of the major environmental challenges for India, and this challenge continues to escalate as limited recycling channels can be identified and the capacity of valuable landfill space is going to be saturated at an alarming rate. For this reason, in the past ten years, a major research effort has been carried out to find practical ways to recycle waste glass for the production of different concrete products such as concrete blocks, self-compacting concrete and architectural mortar. Some of these specialty glass-concrete products have been successfully commercialized and are gaining wider acceptance. This paper gives an overview of the current management and recycling situation of waste glass and the experience of using recycled waste glass in concrete products in India. Glass is widely used in our lives through manufactured products such as sheet glass, bottles, glassware, and vacuum tubing. Glass is an ideal material for recycling. The use of recycled glass helps in energy saving. The increasing awareness of glass recycling speeds up inspections on the use of waste glass with different forms in various fields. One of its significant contributions is to the construction field where the waste glass was reused for concrete production. The application of glass in architectural concrete still needs improvement. Laboratory experiments were conducted to further explore the use of waste glass as fine aggregates for ASR (Alkali-Silica-Reaction) alleviation as well as the decorative purpose in concrete. The study indicated that waste glass can effectively be used as fine aggregate replacement (up to 40%) without substantial change in strength.

Keywords -Alkali-Silica-Reaction, self-compacting concrete, fine aggregate.

1.INTRODUCTION

Concrete is an artificial conglomerate one made essentially of Portland cement, Water, and aggregates. concrete is the key material used in various types of construction, from the flooring of a hut to a multi storied high rise structure from pathway to an airport runway from an underground tunnel and deep-sea platform to a high rise chimneys and T V towers. In the last millennium concrete has demanding requirements both in terms of technical performance and economy while greatly varying from architectural masterpieces to the simplest of utilities. Concrete is the key component of civil constructions in the world.

This project aims to focus on the possibilities of using waste materials from

DESIGN AND IMPLEMENTATION OF HIGH SECURE VLSI BASED MM-HOMOMORPHIC ENCRYPTION

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ABSTRACT: Due to privacy leakage of sensitive data, the conventional encryption systems are not completely secure from an intermediary servicelike cloud servers. The homomorphic encryption is a special kind of encryption mechanism that can resolve the security and privacy issues. Unlike the public key encryption, this has three security procedures, i.e., key generation, encryption and decryption. In this project, design and implementation of high secure VLSI based MM-fully homomorphic encryption isdone. This system will provide better security and resource efficiency compared to existing standards. fully homomorphic encryption and decryption technique guarantee both privacy and integrity. The main intent is to increase the speed of operation. Initially, input bits and key is given to S-Box. Next, bits are substituted using S-Box. After shifting operation is performed to thesubstituted bits. Now these bits are encrypted using MM homomorphic encryption. Hence MM homomorphic encryption better security compared to exist one.

KEY WORDS: Homomorphic encryption, Large Integer Multiplication, Operand Reduction, VLSI Architecture, S-Box.

I.INTRODUCTION

Fully Homomorphic Encryption is for themost part utilized in the database of the board frameworks (DMBS). One of the present issues related with the utilization of databases is the test of verifying and securely putting away the legitimate treatment of classified information in the remote database. Privacy of touchy data can be guaranteed using cryptography. It may, be the utilization of industrious encryption calculations to store the data in remote databases can fundamentally decrease the presentation of the framework without interpreting. To take care of the Issue, inMIT examines exhibited Crypto system.

Utilizing additively homomorphic cryptoframework enables the server to execute SUM, AVG, and Count Questions over encoded information; the other SQL inquiries utilize the distinctive encryption calculations with the vital usefulness. Theadjustment of completely homomorphic cryptosystem will keep the capacity to perform run of the mill database tasks on encoded information without decoding the information in a confided condition. In any case, such a cryptosystem must fulfill certainprerequisites for practical qualities and computational unpredictability, which is significant.

Fully Homomorphic Encryption (FHE) is a huge achievement in cryptographic research in recent years. A FHE plan can be utilized to elective perform calculations on figure content without trading off the substance of relating the plain text [1]. Therefore, a practical FHE plan will open the way to various new security advances and protection related to the applications, for example, security safeguarding pursuit and cloud-based processing. For the most part, FHE can be ordered into three classifications: cross section based, number based, and learning with mistakes.

One of the fundamental difficulties in theimprovement of FHE applications is to moderate the amazingly high-computational intricacy and asset necessities [2]. For instance, programming usage of FHE in superior PCs still expend the critical calculation time, especially to achieve the vast whole number duplication which more often than not includes more than countless bits. For cross section based FHE, bit

1

RESEARCH ARTICLE

Hall Effect on MHD Flow of a Visco-Elastic Fluid through Porous Medium Over an Infinite Vertical Porous Plate with Heat Source

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ABSTRACT

In this article, we've studied the unsteady movement of an incompressible viscoelastic fluid (Walter's B) in conjunction with the heat transfer near an oscillating plate that incorporates a porous channel taking the current into consideration. When the governing equations are broken into small segments and the problem has a small elasticity, a perturbation procedure is applied to each segment. Main, secondary, and transverse velocities have been analytically and computationally studied using graphs as well as with relation to the skin-friction data, and mathematical functions.

Keywords: Hydromagnetic, Viscoelastic, Hall Effect, Porous medium, Slip-flow regime, heat generation.

INTRODUCTION

Applied by a vast numbers of researchers to this slip-flow model is the idea that several different values are approached when using differing products and procedures, it's because of this broad range of applications that people have seen. During this modern times of complex technology and rapid industrialization, societal and global change, knowing how to maximise the flow of information becomes ever more critical. Any particles located on a surface move at the same speed with respect to the surface (it no longer matters whether it is fluid or solid) The electron on the particle's surface has a tangential velocity that can be calculated; it skips around the surface. One of the assumptions behind expandable sets is that slip must be considered, and cannot be overlooked. Often known as "thin film hydrophobic coat on moving plate", "nano-membrittainleylic hydrophobic coating of the body", is the slippage phenomenon at the solid boundary seen in micro channels and thin oil films of light oils or light

1

Applications of Group Theory in Molecular Systems Biology

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ABSTRACT

Group theory has applications in material science, science and software engineering, and even riddles like Rubik's Cube can be solved utilizing group theory. The group theory is playing a significant role in the current day of science, arithmetic and statistics. It was determined in the nineteenth century in relationship with conveying answers for arithmetical articulations. Specifically, the group was the arrangement of the relative multitude of changes of the underlying foundations of a mathematical articulation that shows the attributes that the blend of any two of these stages has a place with the set. Also later on, the conviction was made summed up to the thought of an abstract grouping. Notwithstanding, an abstract group is the study of a set, with an activity characterized on it. In this paper we discuss some selected mathematical points that can assist us with bettering comprehend the limit among living and non-living frameworks. In the topic molecular systems biology we discuss the abstract algebra and group theory. All through the present work we quickly portray conceivable issues. Regarding the hereditary code we recommend that it could be conceivable to utilize perturbation hypothesis to investigate the neighboring potential outcomes in 64-D space time complex of genome which is advancing. Concerning logarithmic chart hypothesis, there are a few minor open issues we examine. Comparable to arrange elements and groupoid formalism we recommend that the organization chart probably won't be the principle center in gaining the knowledge on aggregate yet the stage-space of the organization elements. In this paper we explain a basic instance on network of C6 and its stage-space organization. Let's imagine that sub-atomic organization ofs cell is really an unpredictable organization of hyper cycles and input circuits that could be better spoken to in a higher-dimensional space. We guess that focusing on hubs in the atomic organization that have key parts in the stage space, as uncovered by investigation of the automorphism deterioration, may be a superior method to medicate revelation and therapy of disease.

Keywords: group theory, molecular systems biology, groupoid formalism, C6 network, automorphism deterioration

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Job insecurity, Job Instability, and Work Satisfaction Context of the COVID 19 Pandemic

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Introduction:

In the context of the COVID-19 pandemic, organizational dynamics have changed, with organizations having to significantly reduce their activities and reduce their workforces or hours of work, Bartik et al., 2020. In general, these conditions have led to lower productivity and organizational competitiveness, ILO, 2020. The jeopardization of the workplace has not only been felt by workers at different industrial sectors, but also their prospects for employment Fernandez 2020, It is possible that insecurity of employment may be caused by the particular employee concerned, and some employees simply cannot cope with the stress resulting from job requirements or high levels of control. Strazdins et al., 2004). It is also the cause of job instability and uncertainty. by the turmoil related to the labor market (Böckerman et al., 2011), in which in the struggle Deep restructuring has been carried out by the economy's players to maintain competitiveness In the area of business, and often have seen an increase in competition within this sector Hassard. & Morris, 2017) and in terms of technological developments and innovation as well as socioeconomic crises and/or sanitary crises (Wilson et al., 2020).

The literature highlights findings showing that low levels of job satisfaction are associated with instability in employment and unemployment. Reisel et al., 2010; In assessing the literature, this paper addresses a number of gaps. Links between job instability, job insecurity, and job

OFF-BOARD ELECTRIC VEHICLE BATTERY CHARGER USING PV ARRAYS

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ABSTRACT:

Study on renewable energy based Electric Lorry battery charging system is flourishing in the automobile market in the recent years. The intermittent nature of the renewable resource sources causes the grid linked renewable resource systems for Electric car battery billing applications. Therefore, an Electric Lorry battery charger making use of grid connected PV system is proposed in this paper. Off-board battery chargers need to be very carefully looked at this requirement for quick refuelling created a change in EV billing technology to focus on DC facilities. This theory makes use of fuzzy logic to control energy intake and also EV battery charger utilizing SEPIC as well as BIDC (Bidirectional) converter. The Fuzzy reasoning control is utilized to merge the advantages of stable current control and constant voltage control. Unclear reasoning is appropriate for such executions. This strategy will help design the dynamics of nonlinear systems. Simulink determined as well as executed the solar-power system using photovoltaic cells, DC-DC converters, batteries, as well as fuzzy reasoning controllers.

Keywords: EV, DC, SEPIC, BIDC, PV system.

Breaking New Ground: Research Insights on Work-Life Balance in Developing Countries

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ABSTRACT

This article offers a thorough examination of the intricate dynamics surrounding Work-Life Balance (WLB) within organizational contexts. Beginning with a historical perspective on the merit of prioritizing activities in a balanced manner, the study highlights the increasing popularity of WLB, particularly in the last two decades. It underscores WLB as a powerful human resource tool adopted by industry giants like Microsoft and Hewlett Packard. The discussion expands to emphasize the significance of WLB in achieving a win-win situation for both employees and companies, correlating it with positive outcomes such as increased productivity and reduced turnover intentions. Focusing on the healthcare sector in developing countries, notably India, the article addresses the dearth of research in this context. It explores the challenges and benefits associated with implementing WLB practices, shedding light on the pivotal role of flexible work options, including flexible hours and telecommuting. The study also delves into the complexities of work-life conflict and introduces research hypotheses positing significant effects of schedule flexibility, manager support, and job autonomy on both work-life conflict and turnover intentions. In conclusion, this research seeks to contribute valuable insights to the literature, fostering awareness about the critical importance of WLB practices in diverse professional settings.

Keywords: Work-life balance, Turnover intentions, Work-life conflict, Private hospitals, India

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DYNAMIC ANALYSIS OF MULTISTOREY BUILDING FOR DIFFERENT CONFIGURATION MODELS

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Abstract: Nowadays, most buildings are delineated by irregular in both plan and vertical configurations. Irregularities in arrange and lack of symmetry might imply vital eccentricity between the building mass and stiffness centers, give rise to damaging coupled lateral response. Moreover to design and analyze an irregular building a significantly high level of engineering and designer effort is needed, whereas a poor designer will design and analyze an easy subject field options. In different words, damages in those with irregular options are over those with regular one. Therefore, Irregular structures would like an additional careful structural analysis to succeed in an acceptable behavior throughout a devastating earthquake. Extinct earthquakes events demonstrate that, buildings with irregularity are vulnerable to earthquake damages. So as it's essential to spot the seismic response of the structure even in high seismic zones to cut back the seismic damages in buildings. The most important objective of this study is to grasp the behaviour of the structure in high seismic zone and also to evaluate Storey overturning moment, Storey Drift, Displacement, Design lateral forces. During this purpose a 12 storey-high building on three totally different shapes like Rectangular, L- shape, and T-shape are used as a comparison. The complete models were analysed with the assistance of ETABS. In the present study, Comparative Dynamic Analysis for all three cases has been investigated to evaluate the deformation of the structure.

Keywords -RCC *structure. eccentricity, Storey overturning moment, Storey Drift, Displacement, Design lateral forces, ETABS, Dynamic Analysis.*

1. INTRODUCTION

To carry out properly in an earthquake, a building should very personal four essential attributes, especially easy and normal configuration, and adequate lateral power, stiffness and ductility. Buildings having easy ordinary geometry and uniformly allotted mass and stiffness in plan further to in elevation, go through a incredible deal a incredible deal much less damage than homes with weird configurations. A constructing can be taken into consideration as uncommon for the talents of this massive, Amid a seismic tremor, unhappiness of form begins at features of shortcoming. This shortcoming emerges because of irregularity in mass, stiffness and geometry of shape. The systems having this intermittence are named as Irregular systems. Sporadic systems make contributions a big section of town foundation. Vertical inconsistencies are one of the actual reasons of disappointments of structures amid tremors. For example, systems with sensitive story were the maximum great structures which caved in. Along the ones strains, the impact of vertically anomalies inside the seismic execution of systems seems to be genuinely crucial. Stature insightful adjustments in stiffness and mass render the dynamic tendencies of those systems not pretty just like the commonplace constructing.

A STUDY ON

EFFECTOFAGGREGATEGRADATIONANDSIZEONCOLDBITUMIN

OUSMIX

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Abstract :

In India, about90%ofthetotalroadnetworkincluding airfieldpavementisof flexiblepavement,whichareconstructedusinghotmixtechnology.Hotmix technology hasnumerous drawbacks.Someofthemare liberation ofgreenhouse gases, highconsumptionofenergy,healthhazardstoconstructionlabours,etc.Hence, adoptionofalternativetechnologysuchascoldmixtechnologyisneededtoreducethe drawbacksofhotmixtechnology.

Inthisstudytwoaggregategradationsaretakenbasedon theNominal MaximumParticleSize(NMPS):NMPS13.2mmandNMPS19mmfromMinistry of RoadTransportandHighways(MoRTH)specification.Further,twomoreaggregate gradationswereformulatedforeachNMPSbasedonmodifiedFullerandThompson maximumdensity gradationandCooper'setal.equationwith4%filler.Thegradation ofMoRTHgradation,modifiedFullerandThompsonequationandCooper'setal. equationforNMPS13.2mmaredesignatedasM13.2,MFT13.2,andC13.2 respectivelyandforNMPS19mmgradationsasM19,MFT19andC19respectively. Mediumsettingcationictypebitumenemulsionwasusedforthisstudy.Thestudy methodologyincludescharacterizationofaggregatesandemulsion,determinationof pre-wettingwatercontent,volumetricanalysisofmixesbyMarshallStabilitytest, performanceevaluationbyRetainedMarshallStability(RMS)test.A parametercalledgradationratioiscorrelatedwithstrengthandperformanceparameters ofthemixtopredictlaterfromaggregategradationcurvealone.

Keywords - NMPS, MORTH, prewettingwatercontent, MarshallStabilitytest, RetainedMarshallStability.

1.INTRODUCTION

Intheemulsion-basedcoldmixtechnology,theadditionofpre-wettingwater totheaggregate,thereafteradditionofemulsio ntoit,productionofthemix,layingand compaction,allprocesses aredoneattheroomtemperature(23°Cto25°C) .Inaddition tothis,fieldtrialshaveprovedthatcoldmixcan

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A LABORATORY STUDY OF RECYCLING OF CONCRETE USING IN BITUMINOUS MIXES

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Abstract : Recycled concrete aggregate (RCA) is considered as one of the largest wastes in the entire world which is produced by demolishing concrete structures such as buildings, bridges, and dams. It is the intention of scientists and researchers, as well as people in authority, to explore waste material recycling for environmental and economic advantages. The current paper presents an experimental research on the feasibility of reusing RCA in BC mixtures as a partial replacement of coarse and fine aggregates. The engineering properties of BC mixtures containing RCA have been evaluated for different percentages of binders based on the Marshall mix design method. Test results revealed that the performance of BC mixtures is affected by RCA due to higher porosity and absorption of RCA in comparison with virgin granite aggregates. However, the engineering properties of BC mixtures containing a particular amount of RCA showed the acceptable trends and could satisfy the standard requirements. Moreover, to achieve desirable performance characteristics, more caution should be made on properties of BC mixtures containing RCA.

Keywords -Bituminous Concrete (BC), Recycled concrete aggregate (RCA), Marshall mix.

1. INTRODUCTION

Urbanization growth rate in India is very high due to industrialization. Growth rate of India is reaching 9% of GDP. Rapid infrastructure development requires a large quantity of construction materials, land requirements & the site. For large construction, concrete is preferred as it has longer life, low maintenance cost & better performance. For achieving GDP rate, smaller structures are demolished & new towers are constructed. Protection of environment is a basic factor which is directly connected with the survival of the human race. Parameters like environmental consciousness, protection of natural resources, sustainable development, play an important role in modern requirements of construction works. Due to modernization, demolished materials are dumped on land & not used for any purpose. Such situations affect the fertility of land. As per report of Hindu online of March 2007, India generates 23.75 million tons demolition waste annually. As per report of Central Pollution Control Board (CPCB) Delhi, in India, 48million tons solid waste is produced out of which 14.5 million ton waste is produced from the construction waste sector,

BEHAVIOR OF CELLULAR FOAMED CONCRETE WITH CHANGE OF ALUMINIUM POWDER IN CONCRETE.

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Abstract— *This project is intended to determine both mechanical and physical properties of foamed concrete. These properties are critical in assessing the usage of foamed concrete in the industry. The compressive strength of foamed concrete is very less when compared to the conventional concrete because of the presence of voids. The permeability of foamed concrete is high when compared to conventional concrete. Due to the high workability of foamed concrete, it is very easily mixed, handled, transported and placed in the site. Different Percentages of aluminium powder (% of total volume) used are and comparative condition for foamed concrete. This thesis calculates compressive strength, split strength and flexural strengths for different cases.*

Keywords— *Cellular foarmed concrete, aluminium power, split strength, flexural strength*

1. GENERAL:

Due its self weight there is major difficulty in handling and it may cause problems like differential settlement. Therefore light weight concrete was introduced in order to replace conventional concrete. By introducing light weight concrete the density is reduced without majorly decreasing the strength and materials like fly ash which are hazardous to environment can be used to a greater extent in this light weight concrete which in turn increases the strength of concrete. One such special type of light weight concrete is foamed concrete.

2. LITERATURE:

Xuemei Chenet et al. (2014), has investigated a series of manufacturing parameters, such as quick lime and aluminate cement dosages, water to solid ratio (W/S), CFA fineness and type, chemical activators and so on, based on the

density and compressive strength of specimens and the performances of products were also tested.

Zuhua Zhang, et al. (2014), has addressed some of the sustainability questions currently facing the cement and concrete industry, in the context of the utilization of foam concretes based either on ordinary Portland cement (OPC) or on geo polymer binders. The potential of geo polymer binders to provide enhanced fire resistance is also significant, and the alumina silicate basis of the geo polymer binding phases is important in bringing high temperature stability.

Michael Yong Jing Liu et al. (2014), has investigated the main objective of the experimental results concerning the thermal conductivity of oil palm shell foamed geo polymer concrete (OPSFGC), utilizing waste materials such as low-calcium fly ash (FA) and palm oil fuel ash (POFA) as cementitious materials, and oil palm shell (OPS) as lightweight coarse aggregate (LWA)

FAILURE STUDY OF SPACE FRAMED STRUCTURE WITH NON LINEAR ANALYSIS

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Abstract—Progressive collapse denotes an extensive structural failure initiated by local structural damage, or a chain reaction of failures following damage to a relatively small portion of a structure. Prediction of possible progressive collapse under specific conditions may provide very important information that could be used to control or prevent progressive collapse. Pushover analysis method is a nonlinear static analysis method that could be used in earthquake engineering to calculate the residual capacity of two frames designed for different seismic region to resist progressive collapse under a missing column scenario.

The present study describes the comparison between the irregular steel space frameworks with and without having considerable progressive collapse cases using nonlinear static analysis. Pushover analyses using various invariant lateral load patterns and modal pushover analysis were performed on steel moment resisting frames. The results revealed that the steel space frameworks with progressive collapse cases showed a large decrement in the maximum base share and maximum displacement capacity compared to their irregular steel space frameworks without progressive collapse cases. The results of the pushover analysis also confirmed that the irregular steel space frames works with progressive collapse cases have significantly improved stability in seismic zones over their counterparts without progressive collapse cases

Keywords— Pushover, Progressivecollapse, Baseshear, Capacitycurve, Zones, Displacemnt.

1. INTRODUCTION

A simple computer-based push-over analysis is a technique for performance-based design of building frameworks is Push-over analysis attains much importance in the past decades due to its simplicity and the effectiveness of the results. The present study develops a push-over analysis for steel frame designed according to IS-800 (2007) and ductility behaviour of each frame.

Suitable capacity parameters and their acceptable values, as well as suitable methods for demands prediction will depend on the performance level to be evaluated. In light of these facts, it is imperative to seismically evaluate the existing building with the Present day knowledge to avoid the major destruction in the future earthquakes. The Buildings found to be seismically deficient should be retrofitted or strengthened.

2. PUSHOVER METHODOLOGY:

A pushover analysis is performed by subjecting a structure to a monotonically increasing pattern of lateral loads, representing the inertial forces which would be experienced by the structure when subjected to ground shaking. Under incrementally increasing loads various structural elements may yield sequentially. Consequently, at each event, the structure experiences a loss in stiffness. Using a pushover analysis, a characteristic non-linear force displacement relationship can be determined.

3. STRUCTURAL MODELLING:

The study in this thesis is based on nonlinear analysis of steel frames on different configurations of frames are selected such as

SEISMIC EVALUALTION OF MULTISTORIED BUILDINGS WITH GROUND SOFT STORY AND WITH INFILLS

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Abstract: Recent building codes for seismic design and evaluation in Europe and American feature performance based criteria that entail the estimation of inelastic response of the building due to seismic. These seismic demands can be accurately determined by employing methods of nonlinear time history analysis. Simplified methods based on nonlinear static analysis, known as pushover analysis method and nonlinear dynamic analysis, known as time history analysis method, have been developed by several regulations to satisfy the performance-based criteria for seismic design and evaluation of buildings. This thesis deals with multistory buildings with open (soft story) ground floor are inherently vulnerable to collapse due to seismic loads, their constructions is still widespread in develop nations. Social and functional need to provide car parking space at ground level far outweighs the warning against such buildings from engineering community. In this study, 3D analytical model of multistory buildings has been generating for different buildings models and analyzing using structural analysis tool 'ETABS'. To study the effect of ground soft, infill, and models with ground soft during earthquake, seismic analysis both linear static, linear dynamic (response spectrum method) as well as nonlinear static(pushover) procedure have to be performed. The analytical model of building includes all important components that influence the mass, strength, stiffness of the structure. The deflections at each story have to be compare by performing equivalent static, response spectrum method as well as pushover have also be performed to determine capacity, demand and performance level of the considering models. Numerical results for the following seismic demands considering the inelastic behavior of the building, ductility coefficients of structures.

Keywords -nonlinear static analysis (pushover analysis), soft story, ground soft, infill, mass, strength, stiffness, inelastic behavior, drift ratio, ductility coefficients.

1. INTRODUCTION

The capacity of structural members to undergo inelastic deformations governs the structural behavior and damageability of multi-storey buildings during earthquake ground motions. From this point of view, the evaluation and design of buildings should be based on the inelastic deformations demanded by earthquakes, besides the stresses induced by the equivalent static forces as specified in several seismic regulations and codes. Although, the current practice for earthquake-resistant design is mainly governed by the principles of force-based seismic design, there have been significant attempts to incorporate the concepts of deformation-based seismic design and evaluation into the earthquake

Comparative study on partial replacement of cement with Hospital waste ash Coal dust and Rice husk ash

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Abstract : The use of Portland cement in concrete construction is under critical review due to high amount of carbon dioxide gas released to the atmosphere during the production of cement. In recent years, attempts to increase the utilization of waste materials to partially replace the use of Portland cement in concrete are gathering momentum. Most of this by-product material is currently dumped in landfills, creating a threat to the environment. M25 grades of concrete has been chosen as the reference concrete specimen. This project deals with partial replacement of cement with coal dust, Hospital waste ash and rice husk ash varies with percentages of 0%, 5%, 10%, 15% &20%. In this study, workability, compressive strength, Flexural strength and Tensile strength of concrete was evaluated to investigate the optimal use of coal dust, Rice husk ash and hospital waste ash as cement in concrete.

Keywords -coal dust, Rice husk ash, hospital waste ash, workability, compressive strength, Flexural strength and Tensile strength

1.INTRODUCTION

In Civil Engineering "Cement" plays an important role as it is impossible to produce any sustainable infrastructure without use of cement. We can say everything is incomplete without "Cement", as construction industries rapidly growing with new innovations and ideas. Leaving waste materials in to environment directly results to damage of natural climatic conditions, hence use of waste materials is made at most importance in present study. Coal dust a waste obtained from mining process is used as partial replacement to cement a pozzolonic material also used after identifying the optimum usage of coal dust in partial replacement of cement. Cement, at the time of production produces equal

amounts of CO_2. Hence the partial replacement of cement can be made practice to optimize the cement content effects the production of cement and CO_2 content production. The demand for construction material is also increasing, at the same time the cost of the construction material is also increasing, To overcome these type of problems are want to found the new composition with low cost is the ultimate aim of our project.

A. Hospital waste ash

Hospital waste ash is a special type of waste. All human activities producing waste. We all know that such waste may be dangerous and needs safe disposal. Industrial waste, sewage and agricultural waste pollute water,

USE OF WASTE PLASTIC AND CRUMB RUBBER IN CONSTRCTION OF FLEXIBLE PAVEMENT

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Abstract : Generation of plastic waste and rubber waste is increasing day by day and the necessity to dispose of this waste in a proper way is arising. Nowadays pavements are subjected to various kinds of loading which affects the pavement performance condition that causes various distresses. Use of plastic and rubber in pavement design as an innovative technology not only strengthened the road construction but also increase the road life. In this Paper, different tests were conducted on aggregates, bitumen, and bituminous mixes. The effect of the addition of waste plastic in the form of locally available PET bottles had been checked on aggregates as well as on bitumen. As per visual inspection, 4%, 6%, 8% and 10% plastic coating was made on aggregates and sample were checked for crushing, impact, water absorption and coating and stripping value. Effect of addition of waste plastic and crumb rubber on bitumen had been studied by varying concentrations of CRP from 0% to 12.5% i.e. 0%, 5%, 7.5%, 10% and 12.5% in bitumen. Various tests such as penetration, ductility, softening point, flash and fire point were performed on the samples. The optimum percentage was taken from these tests which had shown satisfactory results for all the tests performed. Later, that optimum percentage value was used for preparing bituminous mixes for testing pavement properties such as Marshall Stability, Marshall Flow values. As per the test results, in DBM and BC about 7.5% and 10% plastic waste with crumb rubber replacement in bitumen shows better results than conventional bitumen as well as 10% plastic coating to aggregates also improve the load-bearing capacity. By using plastic waste in flexible pavement design, the problem of plastic and waste rubber disposal gets solved as well as the performance of roads gets improved.

Keywords – Pavement, Bitumen, Waste plastic, Crumb rubber, Plastic coated aggregate, CRP(Crumb rubber with bitumen), Marshall Stability, Marshall Flow values, DBM(Dense bituminous macadam), PET bottles.

1.INTRODUCTION

In the construction of flexible pavements, bitumen plays the role of binding the aggregate together by coating over the aggregate. It also helps to improve the strength of the road. But its resistance towards water is poor. Anti-stripping agents are being used. Bitumen is a sticky, black and highly viscous liquid or semi-solid which can be found in some natural deposits or obtained as by-product of fractional distillation of crude petroleum. It is the heaviest fraction of crude oil, the one with highest boiling point (525°C) .Various Grades of Bitumen used for pavement purpose:30/40, 60/70 and 80/100.

The desirable properties of bitumen for pavement are:

- Excellent binding property with aggregates, both cohesive and adhesive in nature.
- Repellant to water.

A STUDY ON PROPERTIES ON SELF CURING CONCRETE

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Abstract: Concrete requires curing to continue with the hydration process. Self-curing concrete is one of the special concretes in mitigating insufficient curing due to human negligence paucity of water in arid areas, inaccessibility of structures in difficult terrains and in areas where the presence of fluorides in water will badly affect the characteristics of concrete. The present study involves the use of polyethylene glycol which acts as a self-curing compound. The most important aspect is that this compound is expected to maintain maximum water retention there by contributing to full hydration. The parameters in the study include grade of concrete, type and dosage of polyethylene glycol, curing conditions and age of curing. The present involves the two types of self-curing compounds PEG 4000, PEG 200 with dosage of 0.1%, 0.5%, 1% for M70 grade of concrete. Weightless and compressive strength, flexural strength and durability tests were determined as a performance benchmark for the investigated curing compounds. It was reported from the study that higher dosage (1%), higher molecular weight (4000) based PEG compounds act as better curing compounds in higher grade concretes compared to another self-curing compound.

Keywords -self curing, Polyethylene glycol, PEG 4000, PEG 200, Hydrophilic compound, Water retention, Compressive strength, flexural strength, durability tests.

1.INTRODUCTION

A. Curing

Adequate curing is essential for concrete to obtain structural and durability properties and therefore is one of the most important requirements for optimum concrete performance. Curing of concrete is the process of maintaining the proper moisture conditions to promote optimum cement hydration immediately after placement. With insufficient water, the hydration will not proceed and the resulting concrete is practically affected, failing to provide a protective barrier against ingress of harmful agents. Proper curing of concrete structures is important to meet performance and durability requirements. Enough water needs to be present in a concrete for the hydration of cement to take place. However, even mix contains enough water, any loss of moisture from the concrete will reduce the initial water cement ratio and result in incomplete hydration of cement especially with the mixes having low water cement ratio. This results in very poor quality of concrete.

Methods of Conventional Curing:

Methods of curing concrete fall broadly into the following categories:

i) Ponding or spraying

ii) By using covering of wet hessian.

BEHAVIOR OF SELF CURING CONCRETE WITH SPECIFIED EXTERNAL AGENT LIQUIDS

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Abstract— Concrete is most widely used construction material due to its good compressive strength and durability. Curing plays a major role in developing the concrete microstructure and pore structure. Curing is the process of maintaining proper moisture content particularly within 28 days to promote optimum cement hydration immediately after placement. Good curing is not possible in most of the cases such as vertical members, human errors, places where there is scarcity of water, In such conditions self curing concrete is very adaptable. One of the techniques of self curing concrete is by using Hydrophilic materials (water loving, such compounds have an affinity to water and are usually charged or have polar side groups to their structure that will attract water)

Keywords—Self curing, Paraffin Wax, Hydrophilic Material

1. INTRODUCTION

Commonly available Hydrophilic materials are Polyethylene Glycol, Paraffin Wax, Acrylic acid. The use of Hydrophilic materials minimizes the loss of water from the concrete and helps in continuous curing of concrete. In this study, considered grade of concrete is M40. The effect of variation in strength parameters i,e., Compressive Strength, Split Tensile Strength and Flexural Strength were studied with Liquid Paraffin Wax (self curing agent) (0.1% weight of cement) and compared with that of conventional cured concrete. The admixture Conplast SP430 was added (0.3% weight of cement).The design mix proportion was 1:1.45:2.95.

2. SELF CURING CONCRETE (SCUC):

- Self curing concrete is one of the special concretes in mitigating insufficient curing due to human negligence, scarcity of water in arid areas, inaccessibility of structures in difficult terrains and in areas where the presence of fluorides in water will badly affect the characteristics of concrete.

- The concept of self curing agents is to reduce the water evaporation from concrete and hence increase the water retention capacity of the concrete compared to conventional concrete.

- It was found that Hydrophilic materials (water loving. Such compounds have an affinity to water and are usually charged or have polar side groups to their structure that will attract water) such as Polyethylene Glycol, Paraffin wax, or Acrylic acid can be used as self curing agents in concrete.

3. NEED OF SELF CURING:

Conventional curing is not possible in the following cases:-

- For the vertical member