INTERNATIONAL JOURNAL OF APPLIED SCIENCE ENGINEERING AND MANAGEMENT

ISSN2454-9940www.ijsem.org

Vol 8, Issuse.3 July 2020

Power System Stabilizer improves standard stability using Particle Swarm Optimization.

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Abstract-- *Analysis of the dynamics of a singular machine connected to an endless bus power machine is presented in this study. This kind of examination requires some level of device modelling. The synchronous gadget, excitation machine, and strength gadget stabiliser are the three most popular gadget components right now. The programming tool Matlab/Simulink is used to study the performance of the device. Particle Swarm Optimization (PSO) is used to construct the energy gadget Stabilizer (PSS) in accordance with the device's performance. This is followed by simulation of the PSS design in a model and analysis of the dynamic machine response. The PSS was able to stabilise a volatile device because simulation effects without the PSS indicated poor machine response, but the PSS has progressed and stabilised an unstable device.*

Particle Swarm Optimization, Dynamic Stability, and Power System Stabilizer are all terms that belong in the index.

I. INTRODUCTION

One of the most important elements affecting the power system's three primary components — generation, transmission, and distribution — is power system stability. Sudden load changes, faults, and changes in generator shaft speed all have the potential to disrupt the system's stability. Stability issues have resulted in scillation that might pile up over time if left unaddressed. Because they. hinder power transfer in transmission lines and stress the mechanical shaft, even low-frequency undamped oscillations are undesirable. The excitation system may be a useful tool for improving stability in the dynamic range and in the initial few cycles after a disturbance if it is designed and compensated properly. To compensate for generator rotor oscillations with dampening, a stabilising auxiliary signal is generated, and the equipment that generates it is known as a Power System Stabilizer (PSS). Controlling the generator's excitation or speed may help maintain stability. Using an Automatic Voltage Regulator AVR, the excitation may also be adjusted. PSS is now one of the most common remedies to the AVR's instability. In addition to the automated voltage regulators system and/or the turbine controlling system of a producing unit, PSS offers extra control loops. A typical method for improving the stability of both tiny signals (steady-state) and big signals (transients), it is this one. These oscillations are commonly dampened by PSS, which is both efficient and affordable. The exciter controls the amount of current provided to the generator field winding by the AVR, which in turn regulates the voltage at the generator terminals. In most cases, it's utilised to smooth out power system tremors caused by fluctuations in load. It maintains the generator's terminal voltage at a consistent level, allowing the voltage on the load side to stay almost constant even while the load changes over time. The purpose of this article will be discussed in the next part. Section three will focus on the modelling of the whole system. In the next part, we'll go through the specifics of PSS design. Finally, implementation and simulation will be addressed in section five of this paper.

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INTERNATIONAL JOURNAL OF APPLIED SCIENCE ENGINEERING AND MANAGEMENT

ISSN2454-9940www.ijsem.org

Vol 8, Issuse.2 June 2020

Artificial Intelligence HealthCare Chabot System

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Abstract:

Through chat bots one can communicate with text or voice interface and get reply through artificial intelligence. Typically, a chat bot will communicate with a real person. Chat bots are used in applications such as ecommerce customer service, call centers and Internet gaming. Chatbots are programs built to automatically engage with received messages. Chatbots can be programmed to respond the same way each time, to respond differently to messages containing certain keywords and even to use machine learning to adapt their responses to fit the situation. A developing number of hospitals, nursing homes, and even private centers, presently utilize online Chatbots for human services on their sites. These bots connect with potential patients visiting the site, helping them discover specialists, booking their appointments, and getting them access to the correct treatment. In any case, the utilization of artificial intelligence in an industry where individuals' lives could be in question, still starts misgivings in individuals. It brings up issues about whether the task mentioned above ought to be assigned to human staff. This healthcare chatbot system will help hospitals to provide healthcare support online 24 x 7, it answers deep as well as general questions. It also helps to generate leads and automatically delivers the information of leads to sales. By asking the questions in series it helps patients by guiding what exactly he/she is looking for.

Keywords: Artificial Intelligence, Prediction, Pattern matching, Disease, Query processing

Introduction:

Artificial Intelligence, also referred to as Machine Intelligence, is an intricate innovation smoothly gearing up to revolutionize our lives forever. The stimulation of human intelligence using contemporary computers that imitates cognitive functions is changing the ways of problem-solving. And with cutting-edge disciplines such as AI and Chat bots, researchers are leading the way to a great transformation. Apart from all other ways of demonstrating an impact, the role of AI in health. To lead a good life healthcare is very much important. But it is very difficult to obtain the consultation with the doctor in case of any health issues. The proposed idea is to create a medical chatbot using Artificial Intelligence that can diagnose the disease and provide basic details about the disease before consulting a doctor .To reduce the healthcare costs and improve accessibility to medical knowledge the medical chatbot is built. Certain chat bots acts as a medical reference books, which helps the patient know more about their disease and helps to improve their health. The user can achieve the real benefit of a chatbot only when it can diagnose all kind of disease and provide necessary information. A text-to-text diagnosis bot engages patients in conversation about their medical issues and provides a personalized diagnosis based on their symptoms. Hence, people will have an idea about their health and have the right protection. are industry is particularly ground-breaking.

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INTERNATIONAL JOURNAL OF APPLIED SCIENCE ENGINEERING AND MANAGEMENT

ISSN2454-9940www.ijsem.org

Vol 8, Issuse.2 June 2020

Non-conventional energy sources: practical applications

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Abstract— *There are several commercial and government future mission plans to integrate renewable power assets and their potentials for use in Bangladesh, which are reviewed in this study. The need for energy in a developing country like Bangladesh may be on the rise. Nearly 70% of Bangladesh's population is unable to access electricity, with the majority of the population living in rural regions. Solar photovoltaic (PV) power is a well-known renewable energy resource, despite the fact that the world's biggest renewable energy plant uses hydroelectric power. Also widely recognised are wind, biogas, small hydro, and tidal. Bangladesh's government (GOB) has launched a plan to produce 5% of the country's total power from renewable resources by 2015, and 20% by 2020. The GOB is committed to facilitating public and private sector finance for renewable energy efforts to replace current non-renewable strength assets and boost contributions from renewable electricity principally based on technology via the allowed renewable strength coverage. In this context, a review of present renewable energy efforts is necessary, as well as an investigation of the resources' potentials. Some renewable energy sources can no longer be installed indiscriminately in every location because of certain characteristics to consider when selecting a source of RER. Investors who read this paper will get a wealth of information regarding the current state of Bangladesh's renewable energy sector, as well as a roadmap for the country's future engagement in these resources. Moreover, the information in this study might be helpful in identifying the most efficient sources of renewable power in a given location.*

renewable, biogas, rice husks, solar PV.

I. INTRODUCTION

Geographically, Bangladesh is between latitudes 20.840 and 26.8380 north and longitudes 88.8010 and 92.8410 east in northern South Asia. According to the United Nations, there are over 160 million people in the country, with an average population density of approximately 1050 people per square kilometre. Rural Bangladesh is home to 70% of the country's population, however they are severely limited in their access to power. Due to the high cost of grid extension in rural regions, efforts to promote the use of renewable energy sources have already begun. This study [3] examines the potential, trend, use, and technology of renewable energy, along with a discussion of the relevant policies, institutions, and prospects for sustainable development and climate change mitigation. This study [4] presents a current picture for renewable energy-related initiatives in Bangladesh.In addition, despite the severity of the crisis, Bangladesh's energy usage is lower than in other Asian nations. The government is forced to enter into long-term contracts at a significant expense and use short-term alternatives, such as acquiring rental power and tiny IPPs based on diesel or liquid fuel, in order to keep the residents' progress and welfare from being stifled. Bangladesh has one of the region's lowest per capita energy consumption rates. Compared to 530 kg oe in India, 510 kg oe in Pakistan, 340 kg oe in Nepal and 470 kg oe in Sri Lanka per capita energy consumption is 160 kg oe in Bangladesh [5]. In Asia, the typical household uses 640 kilowatt hours per year. As a result, it's become evident that Bangladesh boasts Asia's lowest per capita energy use. There is a long-term plan in place by the government to alleviate the financial difficulties caused by a crippled electricity supply. The plan has produced a balanced approach to the energy market's supply and demand dynamics. It is important to consider the possibility of energy trading with domestic possibilities. A key part of the approach would be to figure out what the government can do to diversify the sources of gas and electricity production and what other choices there are.

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INTERNATIONAL JOURNAL OF APPLIED SCIENCE ENGINEERING AND MANAGEMENT

ISSN2454-9940www.ijasem.org

Vol 8, Issuse.3 July 2020

EMPIRICAL ANALYSIS OF FINGER PRINT BANK ALGORITHM BASED FINGERPRINT MATCHING SCHEME

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Abstract: *It is now necessary to safeguard your data/information safely without allowing attackers or intruders the option to steal it. Authentication is deemed the most critical function for this situation, which requires anyone to show their authentication to the system independently and once it is right to encourage them to enter the system features otherwise ignore or block them to progress further. In the information technology and defense sectors, there are several authentication mechanisms available, such as Biometric Scheme, IRIS Matching Scheme, Facial Recognition, Password Protection Scheme, etc. The most common, well-known and one of the best classical schemes is called the Biometric Finger Print Matching Scheme, which enables the user to register the finger print for training purposes in the system and further collects the current (testing) finger print from the user at each time of accessing the features in the system and matches it with the already registered finger print until it matches the already registered finger print The suggested Finger Print Bank Algorithm uses the concepts of effective finger print matching to compare the right finger print correctly and provides the user a Boolean answer to notify the user whether to continue forward or not. Effective filtering schemes are used by the Finger Print Bank Algorithm to filter the finger print to extract the internal and global core information of it and extract the raw code from it and equate it with the finger print already recorded. The optimal outcome and consistency of outcomes was ensured for the whole proposed method.*

Keywords: Fingerprint, Biometric System, Finger Code, Filter Schemes, Finger Print Bank Algorithm.

1.INTRODUCTION

The Biometric-Matching Scheme is the study of a fascinating perception of persons with at least one physical or social feature inherent. Of all biometrics, finger prints are the most widely used parameter for person ID. In legal research, Specific Finger-Print ID is commonly used to assist forensic examinations and so on. An exceptional illustration of edges-and-valleys on the surface of a person's finger is a special finger-print. An edge is defined as a bent solitary portion, as the space between two contiguous edges is a valley. The neighborhood boundary discontinuities are Minutiae-Points, which are of two kinds: edge-endings-and-bifurcations '. There are about '40-100' Minutiae-points [1][2] for a decent quality shot. It is these minutiae-points that are used to assess the identity of a single fingerprint. It is necessary to define Mechanized Finger-Print acknowledgment and self-validation systems [2][5] as check or ID frameworks.By organizing against an existing Finger-Print database, the check protocol either recognizes or denies the client's character. Using Finger Prints, the character of the client is set up to discern facts. The meaning of the Finger-Print image is of essential importance, as precise alignment of Finger Prints depends to a large degree on edge structures. In any event, owing to elements of commotion that degenerate the lucidity of the edge systems, a particular Finger-Print image can not necessarily be quite defined by and by.

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IJMECE

ISSN2321-2152 www.ijmece .com

Vol 8, Issuse.3 July 2020

End-to-End Image Super-Resolution via Deep and Shallow Convolutional Networks

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ABSTRACT

A novel picture super-resolution (SR) technique based on a Convolution Neural Network (CNN) is being developed as part of this project's research. When learning the feature extraction, upsampling, and high-resolution (HR) reconstruction modules at the same time, a deep convolutional neural network (CNN) is created that can be used to rebuild pictures from any source and is completely trainable. If, on the other hand, you want to train a deep network in a straight line from start to end, this is time-consuming and may provide sub-optimal results since it takes a longer time to converge than other strategies. According to our results, an ensemble of deep and shallow networks should be trained at the same time in order to overcome this difficulty. Its stronger representation power, rather than a lower learning capacity, allows the deep network to capture the high-frequency information contained within visual images, rather than the other way around. When utilised in combination with joint training, the shallow network reduces the complexity of deep network optimization by a factor of two, in part because the shallow network is considerably simpler to optimise than the deep network. High frequency characteristics are rebuilt in a multi-scale manner to further improve the accuracy of HR reconstruction. This allows for the simultaneous integration of both short- and long-range contextual information to be included in the reconstruction, which further improves the accuracy of HR reconstruction. The suggested technique has been carefully examined on a variety of commonly used data sets, and when compared to current best practises, it beats them by a significant margin. Large-scale ablation experiments are carried out to establish the contributions of various network topologies to image SR, which results in the finding of new insights that may be used to future study.

Introduction

A low resolution (LR) observation is used to attempt to recover a high resolution (HR) picture with a large number of high-frequency characteristics from a low resolution (LR) observation. Single image super-resolution (SR) attempts to recover a high resolution (HR) picture with a large number of high-frequency characteristics from a low resolution (LR). However, SR is fundamentally ill-posed since there is a lack of appropriate information about the situation, which is particularly true when considering that numerous HR images may be down-sampled into a single lower-resolution image. According to the most recent study, learning-based strategies have been gaining more and more attention, and they have shown to be more effective in image SR than their predecessors. It is the fundamental premise of learning the mapping function from the LR picture to its HR counterpart via the examination of auxiliary data obtained throughout the method that is being discussed. In order to estimate the residual between the HR picture and the bicubic-interpolated LR image, machine learning algorithms based on the commonly used notion of image SR utilising CNNs are applied. According to the assumptions, the basic structure of the target HR image will be structurally identical to the fundamental structure of the bicubic up sampled LR version.

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IJMECE

ISSN2321-2152 www.ijmece.com

Vol 8, Issuse.2 June 2020

ANALYSIS OF CHALLENGES IN MOBILE CLOUD COMPUTING

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Abstract: - A cell phone is the main computing system nowadays. In general, people are demanding moreresources than a mobile device can afford. A mobile device should get support from an external source to mitigate this. Cloud computing systems are among those outlets. In this article, Cloud Computing addresses the introduction of mobile cloud computing and its possible development. It reviews the concept of Mobile Cloud Computing vs Cloud Computing, functionality, design, advantages, drawbacks, implementations, mobile cloud computing challenges as well as solutions, future scope and analysis.

INTRODUCTION

Mobile Cloud Computing

Mobile cloud computing incorporates modern technology to create a new system that carry out heavy computational tasks, and stores huge quantities of data with mobile devices and cloud computing. In this modern architecture, data processing and data storage are carried out outside mobile devices. Cloud computing technologies are used for mobile applications development, control and hosting. A mobile cloud approach allows developers to create applications that are specifically designed for mobile users without being bound by the mobile operating system, processing system or storage area of the Smartphone. Mobile cloud computing is generally a modern technology, with mobile cloud computing centres accessible via a mobile device from a remote web server, generally without the need to install a client program on a receiver computer. With mobile cloud computing, the necessary resources can be accessed through cloud for the operation of these applications in terms of computing, storage and platform support, and a larger number of devices can be supported. MCC offers business opportunities both for mobile network operators and cloud providers. MCC can be further defined by a rich mobile computing technology which utilizes unified elastic resources of different clouds and network technologies to provide unlimited functions, storage and immovability to support a large number of mobile devices anywhere on the Ethernet or on the Internet, regardless of heterogeneous pay-as-you-go environments and platforms.

Cloud Computing V/S Mobile Computing

Cloud computing and mobile computing all have to do with transmitting data using wireless networks. Cloud computing refers to the specific design of new technologies and services that enable data to be transmitted to a remote, secure location, typically managed by a supplier, over distributed networks via wireless connections. Usually, cloud service providers support many customers. They arrange access between the local or closed networks of the client and their own systems for data storage and data backup. This ensures that the supplier can gather data that is sent to them and store it safely, while providing services through these carefully managed ties back to a customer.

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IJMECE

ISSN2321-2152 www.ijmece .com

Vol 8, Issuse.2 June 2020

Using Data Mining to Predict Hospital Admissions From the Emergency Department

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ABSTRACT

There is a risk that people may suffer serious harm as a result of overcrowding in emergency departments (EDs). As a result, emergency clinics must explore employing innovative techniques to boost patient flow while simultaneously minimising congestion in the waiting area. One option for projecting emergency department admissions is to use data mining and machine learning technologies to anticipate ED admissions. This study, which takes use of routinely obtained administrative data (120 600 records) from two major acute hospitals in Northern Ireland, presents a comparison of two rival machine learning algorithms for predicting the risk of admission from the emergency department at the hospital. Three algorithms are used in the process of developing the prediction models: A decision tree may be divided into three types, which are as follows: Decision trees include: 1) decision trees, 2) gradient boosted machines, and 3) logistic regression, which are all types of decision trees (GBM). The GBM has an AUC-ROC D of 0:824 which was better than both the decision tree and the logistic regression model (accuracy D 80:06 percent, AUC-ROC D 0:824). In this case, the accuracy is 80:06 percent and the AUC-ROC is 0:824. In this situation, the accuracy is 80:31 percent, and the AUC-ROC is 0:859, which indicates a good fit. (0:849) (0:849) (AUC-ROC D 0:849) (accuracy D 79:94 percent). We discovered a number of factors that were connected with hospital admissions via the application of logistic regression. These considerations included hospital location, age, arrival mode, triage category, care group, and previous hospitalisation during the previous month or year, among other things. This study highlights the potential value of machine learning systems by using three fundamental machine learning algorithms to predict patient admissions. Decision support systems may be able to offer a picture of expected ED admissions at any given moment as a consequence of this study, allowing for resource planning ahead of time and avoiding patient flow bottlenecks. This research also suggests that the models described in this study may be utilised to perform comparisons between projected and actual admission rates. Generalised bivariate models (GBMs) are sufficient when interpretability is a concern; however, if accuracy is crucial, logistic regression models should be considered.

INDEX TERMS Data mining, emergency department, hospitals, machine learning, predictive models.

I. INTRODUCTION

Overcrowding in emergency departments (EDs) may result in longer wait times, ambulance diverts, decreased staff morale, worse patient outcomes, such as greater mortality, and the cancellation of elective treatments, to name a few consequences. Surplus capacity in emergency rooms is a serious global concern [7], encouraging the development of innovative ways to alleviate the situation [4]. According to a previous research, overcrowding in emergency departments is a major worldwide problem [7]. The presence of increasing ED visits, inaccurate ED visits, the absence of alternative treatment options, a scarcity of inpatient beds, emergency department staffing shortages, and the closure of other adjacent ED departments are some of the factors that contribute to emergency department congestion, depending on the situation [1, 8]. In particular, the difficulty in transferring patients to an inpatient bed [1, 2] is one of the most significant of these issues, making it imperative for hospitals to manage patient flow and analyse inpatient bed availability and demand [4, 5]. One method that may help to reduce ED congestion and improve patient flow is the use of data mining to identify patients who are at high risk of inpatient admission and making attempts to avoid system bottlenecks [9, 10]. Inpatient bed management, staff planning, and supporting specialised work streams within the emergency department are just a few of the applications that might benefit from a model that can consistently estimate hospital admissions. Cameron and his friends have been taken into custody.

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IJMECE

ISSN2321-2152 www.ijmece

Vol 8, Issuse.2 June 2020

A Machine Learning Model for Average Fuel Consumption in Heavy Vehicles

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Abstract—Data summary for personalised machine learning models for fuel usage should take into account distance rather than time, according to this article. This strategy is combined with seven predictors obtained from vehicle speed and road grade to develop a highly predictive neural network model for the average fuel consumption in large trucks. This method. A fleet's whole fuel consumption may be reduced by using the suggested model, which can be devised and implemented for each vehicle individually with ease. Distance travelled is pooled into predictors for the model. Fuel consumption may be predicted with a 0.91 coefficient of determination and a mean absolute peak-to-peak percent error of less than 4% for routes that contain both city and highway duty cycle segments using a 1 km window, according to the findings of the study. Index Neural networks; vehicle modelling; fleet management; average fuel usage; data summarization.

INTRODUCTION

Manufacturers, regulators, and customers all have an interest in fuel consumption models for automobiles. Every stage of a vehicle's lifecycle necessitates its use. During the operation and maintenance phase of heavy trucks, we simulate the average fuel consumption of these vehicles. Fuel consumption models may be divided into three primary groups, namely: Understanding the physical system is the basis for the development of physics-based models. These models use mathematical equations to explain the dynamics of the vehicle's components at each time step [1], [2]. Models that are data-driven and reflect an abstract mapping from a group of predictors to the objective outcome, in this instance average fuel consumption [3], [4], are called machine learning models. It is possible to create statistical models that are based on data and that establish a relationship between an indicator's probability distribution and the desired result. Both [5] and [6] may be found. When it comes to cost and precision, you'll have to choose one over the other depending on your specific needs. We provide a concept for large fleets of heavy vehicles that can be readily customised for each vehicle's particular needs in this article. An efficient fleet manager may use realistic models for each vehicle to improve route planning for all of the vehicles in a fleet, which ensures that all route assignments are aligned to reduce total fleet fuel consumption. Road transportation of commodities [7], public transit [3], construction trucks [8], and waste trucks [9] are all examples of these fleets. Methodology has to be applicable and adaptable for any fleet, regardless of the wide variety of vehicle technology (current and future) and configurations. Because of these criteria, machine learning is the preferred method when weighing the precision sought against the expense of developing and adapting a customised model for each vehicle in the fleet individually.

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IJMECE

ISSN2321-2152 www.ijmece

Vol 8, Issuse.3 July 2020

A Malware Detection Method Based on Machine Learning for Health Sensor Data.

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Abstract—Small modifications in the malware code are not detected by traditional signature-based techniques. Currently, the vast majority of malware programmes are based on other programmes that have already been developed. In this way, they share certain patterns yet vary in their signatures. It is crucial to identify the malware pattern rather than only detect slight changes in health sensor data in order to get reliable results. As a result, we have proposed a quick detection solution that uses machine learning-based algorithms to identify patterns in malware code. Data from health sensors will be analysed using XGBoost, LightGBM, and Random Forests in particular. Sequences of bytes/tokens or a single byte/token may be supplied into them (e.g. 1-, 2-, 3-, or 4- grams). It's been possible to amass terabytes of software that has been labelled, including both good and bad applications. In order to train and test the dataset, which comprises of health sensor data, we must first pick and get the features, then adjust the three models and assess the features and models. As soon as one model detects an intruding malware programme, its pattern will be broadcast to the other models, thus thwarting the malware program's incursion.

Keywords—Detection of malware, machine learning, health sensor data, and a recurring trend.

INTRODUCTION

All sorts of sensors are being used to gather health sensor data in the Internet of Things era. Health sensor data is inevitably contaminated with malicious code, which is interpreted as an incursion in the target host computer by a hacker. Cybercriminals use a wide variety of malicious code types to infect computers and other electronic devices. Computer systems and networks may be damaged or even destroyed by malware assaults that steal important data. In today's world, it's one of the most serious dangers to computer security there is. Typically, malware analysis is done using one of two methods [4-7]. Static analysis is often performed by displaying the various resources of a binary file without actually implementing it and evaluating each component of the binary file.

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INTERNATIONAL JOURNAL OF APPLIED SCIENCE ENGINEERING AND MANAGEMENT

ISSN2454-9940www.ijsem.org

Vol 8, Issuse.3 July 2020

MINING OF NUTRITIONAL INGREDIENTS IN FOOD FOR DISEASE ANALYSIS

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ABSTRACT

In the prevention and treatment of noncommunicable illnesses, such as cancer, it has long been recognised that a well-balanced, nutritious diet is essential (NCDs). Research has been conducted on the nutritional components of food that are beneficial in the rehabilitation of noncommunicable diseases, on the other hand, but only a small amount has been done. Because of the use of data mining technologies, we were able to conduct a thorough investigation into the association between food components and illnesses. In order to get started, we compiled a list of more than 7,000 disorders, after which we decided which foods were recommended for each condition and which foods were strictly forbidden. Using the China Food Nutrition as a reference, we went on to predict which nutritional ingredients are most likely to have beneficial impacts on disease using noise-intensity and information entropy.

At the conclusion of the research, we proposed an improved technique called CVNDA Red, which is based on rough sets and is used to select the necessary core ngredients from among the most favourable nutritional components. CVNDA Red is based on rough sets and is used to select the necessary core ngredients from among the most favourable nutritional components. A contraction of the phrases CVNDA and Red, which translates as "CVNDA Red." CVNDA Red is a trademark of the CVNDA Corporation. According to our knowledge, this is the first research in China to analyse the association between nutritious elements in food and illnesses via the use of data mining techniques based on rough set theory, which we believe is the case. We have shown via experiments carried out on real-world information that our data mining technique outperforms the conventional statistical approach, with accuracy 1.682 times greater than the conventional statistical methodology. By way of aside, our research has been beneficial in uncovering the first two to three nutritional components contained within foods that may be used to aid in the rehabilitation of a range of common conditions such as type 2 diabetes, hypertension, and cardiovascular disease. These experimental findings indicate the utility of using data mining to choose nutritional components in food for illness analysis when choosing nutritional ingredients in food when selecting nutritional elements in food when selecting nutritional components in food.

1. INTRODUCTION

As defined by the National Council on Chronic Illnesses (NCDS), chronic illnesses are those that are primarily caused by occupational and environmental factors, as well as lifestyle and behavioural variables. According to the organisation, chronic illnesses include obesity and diabetes as well as hypertension and tumours, among other diseases. Global Health Organization's (WHO) Global Status Report on Noncommunicable Diseases (Global Status Report on NCDs) states that the number of people who die each year from NCDs is increasing, resulting in a significant economic burden for the whole world's population. Noncommunicable diseases (NCDs) are responsible for over 40 million deaths per year worldwide, accounting for approximately 70% of all mortality on the globe. Chinese chronic disease and nutrition statistics show that the number of patients suffering from noncommunicable diseases (NCDs) in the country outnumbers those in any other country on the planet, and that China's current prevalence rate has risen far above that found in any other country on the planet.

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INTERNATIONAL JOURNAL OF MATHEMATICAL, MODELLING, AND APPLICATIONS

ISSN 0973-8355www.ijmmsa.com

Vol 8, Issuse2.June 2020

A Nonlinear Regression Application using Machine Learning Techniques for Geomagnetic Data Reconstruction Processing

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Abstract—

When it comes to near-surface exploration, finding unexploded ordnance, and other applications that rely on geomagnetic data, the accuracy and reliability of such data are key considerations. Based on machine learning methods, this research proposes a geomagnetic data reconstruction method for undersampled geomagnetic data. When compared to the conventional linear interpolation methods, the suggested methodology is more time efficient and lower in labour cost. The support vector machine, random forests, and gradient boosting models were all developed in this study. Recurrent neural network, a deep learning method, was also used to boost training performance. A continuous regression hyperplane was generated from a training dataset using the suggested learning methods. Using the provided regression hyperplane, the relationship between the mock-up missing data and the rest of the data is mapped out. Finally, the hyperplanes that were trained were utilised to rebuild the missing geomagnetic traces for validation, and they may be used to reconstruct further gathered fresh field data. In the end, numerical experiments were developed. When compared to the standard linear technique, our methods produced better results, with a reconstruction accuracy that was improved by 10% to 20%.

Index Terms— Modeling and reconstruction using a deep neural network with geomagnetic data

INTRODUCTION

At magnetic observations, continuous measurements of the geomagnetic field are made with a typical time period ranging from seconds to decades. It is possible that the reliability of geomagnetic data is not always guaranteed, particularly in the event of system errors [2]. If the data are under- or missing-sampled, the accuracy of the interpretation of the geomagnetic data is jeopardised [3], necessitating work on data reconstruction. Numerous approaches for reconstructing geomagnetic data have been devised to this point. [4] and [5] used numerical simulations to examine the data assimilation approach to try to forecast unknown geomagnetic field changes.

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INTERNATIONAL JOURNAL OF MATHEMATICAL, MODELLING, AND APPLICATIONS

ISSN 0973-8355www.ijmmsa.com

Vol 8, Issuse2.June 2020

MICRO-STRIP PATCH ANTENNA PERFORMANCE ENHANCEMENT BY DOUBLE LAYER METAMATERIAL SUPERSTRATE

G.Harika[1],Raju Anthotil[2],Erugu Krishna[3],N.Ch.Ravi[4]

***Abstract:** A metamaterial antenna operating at a frequency of fivein this article. Eight GHz are given. The superstrate cover of the metamaterial functions as a mirror that focuses EM radiation on the odd houses of the metamaterial, enhancing the efficiency of the patch antenna alongside its defense against body conditions. The proposed metamaterial lens consists of a double layer with a 9-through-nine cut-ring resonator matrix (SRR) that is located over a rectangular sample fed patch that resonates at 5. Eight GHz. Eight GHz. The type increases the gain and guidance of a simple patch antenna to 7 dB. The simulation results of the proposed antenna are presented in this letter and addressed.*

***Keywords:** Metamaterial (MTM),Split Ring Resonator (SRR).*

1. INTRODUCTION

An overwhelming boom in the area of telecommunications has contributed to substantial desires and has culminated in the main antennas equipment exchange, depending on the frequency, statistical charge or range of transmission.

The antenna is one of the highest components in the wireless communication networks, as the antenna's overall output alone will severely influence the overall performance of the whole device. The design objective of an antenna is periodically controlled by the requirements given by the skipper. Many implementations suggest that the antenna must be compatible and that it may have an excessive orientation during transmission. Those specifications, namely high guidance, are the key trends among antennas and typically offer engineers working in this field a marvelous mission. Traditional antenna technology requires different radiating elements to produce the antenna array[1] to achieve high directivity. However, such a configuration of a frame includes a complicated feed network and requests that a few antenna considerations be held well. Due to the fact that a malfunctioning antenna factor of one or more can also sometimes have serious consequences on the overall efficiency of the antenna system, different exciting responses were suggested to improve the Patch Antenna Directiveness: the main was used to alter the antenna parameter using the DGS approach and the second proposed these days was modified to s

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IJMECE

ISSN2321-2152www.ijmece .com
Vol 8, Issue 2 Apr 2020

Power Line Communication Technology-Based Advanced Patient Health Monitoring System

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Abstract: In recent years, open-source automation systems have progressed fast, resulting in more dependable communication networks. Power lines have grown more popular as a transmission medium in recent years, owing to their ease of installation and cheap cost. They are used in the creation of industrial and residential projects. Power line communication (PLC) is a technique that employs power lines as the physical medium for data transfer. Because the infrastructure has already been constructed, PLC provides a solution that does not need the installation of additional cables. When delivering data at a high rate across a power line, PLC modems are used in a variety of settings such as a residence, an office, a building, and a factory, among others. Because of the added telemetry functions, the cost of the devices has increased, making them unaffordable for all hospitals and clinics to purchase. Because of this, we are developing temperature, blood pressure, and heart rate monitoring technology that uses power line transmission as its foundation. This is a cost-effective piece of technology that communicates using existing power connections. Transmission and reception of signals via a power line cable are accomplished through the use of a power line modem (PLM). With the use of direct-sequence spread spectrum (DSSS) technology, signals may be modulated and demodulated. When compared to other communication technologies such as local area network (LAN), ZigBee, and Bluetooth, the cost of establishing a healthcare monitor utilising Power Line Communication (PLC) was relatively inexpensive compared to other communication technologies.

Index Terms: PLC Technology, PLC modem, Energy Efficiency,ZigBee, FSK.

I. INTRODUCTION

Power lines are used as a physical medium for data transmission in this project. The primary goal of this research is to use PLCC technology to keep track of the well-being of the patients involved. Using the health parameters and data extraction procedures, the PLC modem is provided with an input signal. To communicate the data over the power line, a PLC transmitter is used.

During patient monitoring, a buzzer will sound to alert the doctor if an emergency arises, and a message will be sent to him by GSM. The receiver's data is retrieved and presented. The medical assistant and patient benefit from clear communication thanks to this initiative.

II. RELATED WORKS

In hospitals, medical equipment like ECG machines, ventilators, infusion pumps, heartbeat and blood pressure assistance. Automated patient monitoring systems (APMS) are available in certain hospitals' Medical Intensive Care Units (MICU). Central monitoring and storage of medical data are possible when various automated devices are networked together. Tele-surgery, telemedicine, and biotelemetry employing LAN, RF, ZigBee, and WAN are all examples of recent communication technologies in healthcare that are being used to conduct surgery and provide aid to patients. The medical industry is interested in providing assistance and providing medical treatment to both rural and urban areas in the United States.

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IJMECE

ISSN2321-2152www.ijmece .com
Vol 8, Issue 2 Apr 2020

DESIGN OF DOUBLE LATCH-MULTIPLEXED OUTPUTS PAR ADIGM BASED POWER GATED DUAL EDGE TRIGGERING FLIPFLOP

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Abstract—**In this paper we introduce a new Power gated dual edge triggering flip-flop circuit based on double latch-multiplexed outputs paradigm with totally 20 numbers of transistors including 8 numbers of clocked loads. Initially, the single latch L1 is constructed in two stages with minimum numbers of transistors. To construct the double edge triggering flip-flop, the latch L1 is duplicated as latch L2 and these two latches are connected in parallel and act as master slave flip-flop.**

The sleep transistor technique is one of the power gating methodologies and it is integrated into the new double latched multiplexed master slave flip-flop, for additional power reduction. The sleep transistor technique dramatically reduces the leakage power during the circuit in the mode of sleep. The performance of proposed flip-flop is analyzed by simulating the circuit at 0.12μm CMOS process technology. The proposed flip-flop design offers a power reduction upto 67.89%with considerable speed improvement compared to conventional flip-flops. Also, the performance of proposed design is evaluated by implementing the 4-Bit parallel input serial output shift register. The evaluation indicates that the proposed design is well suited for clocking systems where power dissipation is major concern with considerable delay.

Index Terms—**Digital CMOS, double edge triggering, flip-flop, Low power.**

I. INTRODUCTION

The clocking system, which is constructed by the clock allocation tree and register elements (latches and flip-flop), is one of the major power consuming components in a VLSI system. [1, 2] In the total power dissipation of the system, it accounts for 30% to 60% of the power consumption. Thus, it is essential to reduce the power consumption in both the clock allocation tree and register elements (flip-flops). As a result a reduction of the power consumed by the register elements will have a deep impact on the total power consumption of the clocking system [3]. Low power design methodologies target to reduce the power consumption, thereby obtaining a power efficient register element with high performance.

Leakage currents are important sources of power consumption in modern

CMOS integrated circuits. International Technology Roadmap for Semiconductors states that "Leakage will become a major industry crisis, threatening the survival of CMOS itself" [4]. Suppressing sub threshold leakage currents in large scale integrated circuits is essential for achieving low power consumption in modern clocking system design which consists of several logical blocks.

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International Journal of Information Technology & Computer Engineering

ISSN 2347-3657

Volume 8,Issue 2,April 2020

designing and analysing a simply supported beam's structure

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Abstract –

For this experiment, only beams that could be readily sustained were chosen. Equilibrium is a state in which the beam does not move. Because descending forces must equal rising forces, the total moment of forces on a beam must be zero. Equilibrium. A basic supported beam may travel in any direction since it has just two points of support. With point-loaded beams, not only may bridges and buildings be improved, but also machine beds. The moment's impact on stresses, beam curvature, and beam deflection is crucial in maintaining equilibrium. Additionally, the shear force and bending moment values of a beam may vary greatly across its length.

Introduction

The method for estimating the strength of a beam is independent of the material it is made of. Choosing a beam and doing the following steps are a good place to begin.

Measuring Weight and Measurement

Structural analysis may begin after the maximum load capacity of a beam is known. Loads may be categorised into two types:

The short-term stress on a structure is referred to as a "live load" (i.e. loads from snow, wind, vehicles, etc.). The magnitude of live loads will be specified or referred to in local building regulations.

Loads permanently connected to a structure are referred to as dead loads (i.e. loads from building materials, furniture, etc.). Material weights may be used to estimate the total dead weight of a structure. Most of the time, a rough estimate is given for the dead weight.

Calculating the stress level

When designing a beam, it's important to consider stresses like bending and shear. An in-depth discussion of bending and shear stress is provided here. To estimate the bending and shear stresses, the maximum bending moment and maximum shear in the beam must be known.

If they happen in various places, I'll have to explain the math behind them in a separate piece. A beam's section modulus and cross-sectional area must be known in order to calculate its stresses. If you're looking for this information, tables like the

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INTERNATIONAL JOURNAL OF APPLIED SCIENCE ENGINEERING AND MANAGEMENT

ISSN2454-9940www.ijsem.org

Vol 8, Issuse.2 April 2020

Natural Language Processing-Based Supervised Learning Estimator for Classifying Fake News Articles to Identify In-Article Attribution

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Abstract

Intentionally false material disguised as respectable journalism is a global information accuracy and integrity concern that influences opinion formation, decision making, and voting habits. Social media channels like Facebook and Twitter first propagate so-called 'fake news,' which then spreads to conventional media outlets like television and radio news. Fake news articles spread through social media often have similar language features, such as the overuse of unsupported exaggeration and the failure to properly identify referenced information, when they first appear. Results of a fake news detection investigation are reported in this article to demonstrate the effectiveness of a fake news classifier. There are many tools that may be utilised to construct a new kind of false news detector that utilises quoted attribution in a Bayesian machine learning system as one of the primary features. To put it another way, it is 63.33% accurate in detecting bogus quotations when used in articles. Influence mining is an innovative technology that may be used to identify bogus news and even propaganda, according to the authors. The classifier performance and findings, as well as the research procedure, technical analysis, and technical linguistics, are all discussed in this study. After discussing how the existing system would grow into an influence mining platform, the report ends.

Keywords-Components: Fake News, AI, Natural Language Processing, Attribution Classification, and Influence Analysis

INTRODUCTION

Intentionally misleading material disguised as real journalism (or "fake news") is a global issue that influences opinion formation, decision-making, and voting habits. Most false news is first disseminated through social media channels like Facebook and Twitter, before making its way to mainstream media outlets like television and radio news. If you're looking for an example of how social media may be used to spread false news, look no further than social media sites like Facebook. This article presents and discusses the findings of a fake news detection investigation that demonstrates the effectiveness of a fake news classifier.

II. BACKGROUND AND RELATED WORK

There are several ways in which fake news may be harmful. Public perception and regional and national discussion have been proven to be influenced by it [1–3]. Individuals have been hurt [5] and sometimes killed when they replied to a hoax [6]. It's led to a n backlash against media impartiality among some young people [7], and it's left others unable to distinguish the difference between authentic and fabricated content [8]. Indeed, some believe it had an impact on the 2016 U.S. presidential election [9]. Both humans and bot armies [10] may disseminate false information, but only bot armies have the ability to reach a large number of people at once. In many situations, not only papers are fabricated, but also photos, which are sometimes mislabeled or deceptively labelled. According to

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INTERNATIONAL JOURNAL OF APPLIED SCIENCE ENGINEERING AND MANAGEMENT

ISSN2454-9940www.ijsem.org

Vol 8, Issuse.2 April 2020

DIAGNOSING BLOOD CELL IMAGE USING CNN AND M-SVM

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ABSTRACT

The blood related diseases involve the identification and characterization of patient's blood sample. There are automated methods for detecting and classifying the types of blood cells having important medical application. The system has convolutional neural network(CNN) and the traditional machine learning methods have shown good results in the classification of blood cells images, they are unable to fully exploit the long-run dependence relationship between certain key features of picture and their labels. To transfer the weight parameters the uses transfer-learning method that were pre-trained on ImageNet dataset to the CNN section and adopted a custom loss function to allow the network to train and converge faster with more accurate weight parameters. Experimental results will show that which network model is more accurate and efficient in classifying blood cell images. The analysis of blood cells, in magnifier pictures will give helpful information regarding the health of patients. There are three major types blood cell, erythrocytes (red), leukocytes (white), and platelets. Manual classification is time intense and liable to error because of the various morphological options of the cells. This system presents an intelligent system that simulates a human visual inspection and classification of the three blood cell types. This system comprises two phases: The features of blood cells are extracted through global pattern averaging in the image pre-processing phase, and the training is done first and then classification is carried out in the neural network arbitration phase. Experimental results suggest that SVM method performs better in identifying blood cell, regardless of their size, irregular shapes and orientation, thus providing a fast, efficient and simple scale and rotational invariant blood cell identification system which can be utilized in automation laboratory coverage.

Keywords: Blood cell subtype; Image classifications; supervised learning; Self label algorithms; etc.

I. INTRODUCTION

It is known that blood cells are of different types which include red blood cell, white blood cells platelets. Leukocyte plays an important role in the human immune system and is also called as immune cell of the body. The granulated shape and information of the leucocyte to divide white blood cells into granular cells like eosinophil, neutrophil, basophile and non-granular cells: lymphocyte and monocot is usually used by hematologist. The proportionate of these cells in the blood is different for different people and different dieses. Experts generally use these basic data to determine the type and dieses. Hence the white blood cell classification has a significance and value for medical diagnosis the bleeding in the body in the form of blood clotting. It can detect any damage in the blood vessels. Red blood cells are tiny which are also important in the body to carries fresh oxygen to the overall body over respiratory system in the body from infections. BCCD (Blood Cell Count and Detection) dataset (small scale dataset for blood cell detection) is used and processed the dataset, which then turn it into 12,444 blood cell-enhanced images (comprising 9,957 training data and 2,487 test data). In this dataset, the blood cells into 4 different types, namely, monocot, lymphocyte, and eosinophil and neutrophil

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INTERNATIONAL JOURNAL OF APPLIED SCIENCE ENGINEERING AND MANAGEMENT

ISSN2454-9940www.ijsem.org

Vol 8, Issuse.2 April 2020

Influence of Gangs Around the World

Machireddy Chandra Sekhar Reddy [1], Dhanujaya Rao Kodali [2], Dr.Kummari Srinivas [3], Manchala Ramesh [4],

Abstract

The American study of gangs can no longer start and end with local circumstances but now must also be based in a global perspective. Studying gangs is important because of unprecedented world urbanisation, the retreat of the state under the pressure of neoliberal policies, the strengthening of cultural resistance identities, including fundamentalistreligion, nationalism, and hip-hop culture, the valorization of some urban spaces and marginalisation of others, and the institution alization of gangs in some cities across the word

Keywords: globalization; identity; hip hop; armed young men; death squads.

Introduction

Why study gangs? The simple answer is that gangs are a big international phenomena with millions of members and a voice of people excluded by processes of globalisation. Understanding these social actors is vital to fashioning public policies and establishing social move ments that may both decrease violence and diminish the deep-seated disparities that all too often are perpetuated by contemporary economic, social, and military policies. The American study of gangs can no longer start and end with local con ditions but must also be based in a global perspective. How else do we come to grips with Jamaican posses in Kansas (Gunst, 1995), San Diego's Calle Trente and their past relationship to Mexico's Arellano brothers cartel (Rotella, 1998), the Russian "mafiya" in Chicago (Finckenauer& Waring, 1998), female Muslim gangs in Oslo (Lien, 2002), LA's MS-13 and 18th Street as the largest gangs in Honduras and El Salvador (Decesare, 2003), Nigerian drug smugglers coming through Ronald Reagan International Air port (Grennan, Britz, Rush, & Barker, 2000), Crips in the Netherlands (va Unprecedentedinternational urbanisation has provided ideal circumstances for the expansion of gangs, notably in Latin America, Asia, and Africa. 2. Unlike the rise of the state in the previous industrial age, in the global era the state has receded in the face of rapid financial flows and neo liberal monetary policy, while focusing punitive actions targeting mar ginalized populations. Gangs and other organisations of armed young men fill the vacuum produced by the withdrawal of the social assistance measures of the state. 3.

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International Journal of Information Technology & Computer Engineering

ISSN 2347–3657

Volume 8,Issue 1,Feb 2020

Gaussian Hermite Moments are used for 3D face recognition

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Abstract:

In the subject of pattern recognition, the issue of face recognition is an intriguing one. Using three-dimensional depth data, we provide an approach for face recognition that is both accurate and fast. The goal is to get the absolute minimum of attributes while yet achieving good identification rates for those qualities. Following the extraction of 3D clouds points from the VRML face database, the nose tip of each sample is identified and is used as the new origin of the coordinate system, which is defined as the place where the 3D clouds points intersect. To characterise each person, Gaussian Hermite Moments are employed, and a back propagation neural network is used for the recognition job to finish the extraction process, after which the data is extracted. Following the studies, it was discovered that Gaussian Hermite moments combined with global depth information outperformed another strategy that was based on local depth information. A approach based on local depth information is compared to another method based on ratios of distances and angles between manually chosen facial fiducial sites in this research, and it is shown to perform much better.

Keywords GaussianHermite Moments, 3D Face Recognition, Back Propagation Neural network

1.INTRODUCTION

Given the fact that it is non-intrusive, face recognition is one of the several biometric identication modalities that are now accessible, and it rates highly on the list of subject preferences. However, from the standpoint of the operator, face recognition encounters a number of significant challenges, such as the vast diversity of emotions, ages, positions, lighting, and occlusion that may be seen in the real world. Numerous academics have worked on this problem for years, with the goal of developing a technique that is very accurate at facial recognition. A significant lot of research has been done on it. Several commercial face recognition algorithms are examined in the Vendor Test 2006 [1, which is held every two years and evaluates the performance of several commercial face recognition algorithms. There are three types of face recognition procedures, each of which is classed according to the kind of data that is employed in the recognition process. The first category consists of approaches that are used in two-dimensional space. When applied in a controlled setting, the performance of these technologies is outstanding. Methods that make use of three-dimensional information are classified as belonging to the second category. The integration of both 2D and 3D facial data results in the creation of the third kind of face data. There is a general summary of various techniques offered in [2][3, which is separated into two sections]. Because of the rapid development of 3D collecting technology in recent years, 3D capture has become easier to do, faster to complete, and more resistant to fluctuations in lighting conditions.

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International Journal of Information Technology & Computer Engineering

ISSN 2347–3657

Volume 7,Issue 4,Dec 2019

Using linear programming, transportation cost optimization

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Abstract:

Transportation plays a vital role in every manufacturing industry as it is one of the major activities that binds the whole supply chain and accounts for customer satisfaction with the right delivery time. Hence, bringing in an optimized transport routing on the grounds of time taken and cost of transportation is very important. In this paper, a cost optimization model for transportation of goods of a flavors and fragrance company is presented. The problem was a linear programming problem and was solved using an EXCEL solver. A savings of Rs. 765,000 per annum was estimated comparing the cost of transportation in the new model to that of the previous model.

INTRODUCTION

The transportation services and techniques used by a business are very significant in the development of a bigger client base, and if a successful logistics or transportation model is developed, the firm may generate a substantial amount of revenue. According to Jonsson [1, a logistics and supply chain specialist], improving the direct cost portion of the logistics department may generate 10–30 percent of turnover or profit. In this current environment, where the world's population is growing at an alarming rate and the world is becoming a global village, it is critical for a company to have a cost-effective and time-efficient transportation system that strives to provide its services to customers in every corner of the globe. Because transportation is such a crucial critical part in the success of a firm, many logistics and supply chain professionals have conducted extensive study into different aspects of the transportation system. Ronald and colleagues [2] have developed a genetic algorithm that takes into account the geographic information system (GIS), and this method is used to address issues with transportation routes. According to Dorer and Calisti [3,] the idea of adaptive transportation networks, which automatically optimises the current transportation system in accordance with changing conditions, has been developed. The authors of [4] have explored a variety of linear programming techniques and aspects, as well as their applications.

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International Journal of Information Technology & Computer Engineering

ISSN 2347–3657

Volume 7,Issue 4,Dec 2019

Using a Secret Markov Classifier Structure to Analyze Stained Histology Images for Bosom Malignant Growth

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Abstract

Women are more likely than males to be diagnosed with breast cancer. Automatic image analysis technology may drastically reduce laboratory workloads. Images of breast cancer histopathology provide an indication of a patient's state of health. Breast cancer histopathology photos have to be graded manually. In order to diagnose breast cancer, this study shows that H&E-stained histopathology photos may be automatically graded. One method utilized to process images in this system includes preprocessing, segmentation and feature extraction. An algorithmic computer model is used to make judgments in light of prior information. The information gathered from prior picture evaluations is used to evaluate new images. A model separates the diseased tissue from the rest of the image as cleanly as feasible whenever a picture contains cancerous tissues. Unsupervised learning based on low-contrast pictures may be used to automatically segment and identify tumors, as shown in this work.

1. INTRODUCTION

Women are more likely than any other demographic to get breast cancer. American women are predicted to be diagnosed with more than 266.120 new instances of invasive breast cancer and 63.960 new cases of non-invasive breast cancer this year. Breast cancer may be classed based on its stage. A common way to assess histopathological photos of breast cancer is to determine a diagnosis and prognosis for the patient. There are many grades that indicate how far the cancer has spread. The appearance and activity of cancer cells under a microscope is used to identify the grade of a patient's breast cancer. Doctor Richardson and his colleagues developed the Bloom Richardson modified grading system, which is widely used by oncologists to categorize different forms of cancer. The Nottingham scoring system [1–2] is one name for this procedure.

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INTERNATIONAL JOURNAL OF APPLIED SCIENCE ENGINEERING AND MANAGEMENT

ISSN2454-9940www.ijsem.org

Vol 7, Issuse.4 Dect2019

Using linear programming, transportation cost optimization

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Abstract:

Transportation plays a vital role in every manufacturing industry as it is one of the major activities that binds the whole supply chain and accounts for customer satisfaction with the right delivery time. Hence, bringing in an optimized transport routing on the grounds of time taken and cost of transportation is very important. In this paper, a cost optimization model for transportation of goods of a flavors and fragrance company is presented. The problem was a linear programming problem and was solved using an EXCEL solver. A savings of Rs. 765,000 per annum was estimated comparing the cost of transportation in the new model to that of the previous model.

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INTERNATIONAL JOURNAL OF APPLIED SCIENCE ENGINEERING AND MANAGEMENT

ISSN2454-9940www.ijsem.org

Vol 7 Issuse.4 OCT2019

Using Finite Element Analysis, the Design, Structural, and Thermal Analysis of a Piston

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Abstract:

There is a certain piston design and its maximum gas pressure that was selected for this project. CATIA V5 solid modelling software will be used to produce a piston model for this project. ANSYS will be used to mesh and analyse the geometry. In order to examine piston input conditions and the analysis method, a comprehensive literature search was done. The crucial region of the piston is subjected to significant stresses while operating at high combustion gas pressures, which act as mechanical loads. A thorough static structural analysis is performed for a variety of loading conditions, such as the maximum gas pressure load. A comparison study is carried out in order to choose the best material. Material is never dominated by a comparative analysis. Pneumatic chambers, for example, use cylinders as mechanical components. Gas blowers, syphons, and motors that react. A cylinder seals up the upward movement inside a chamber, preventing any air from leaking out. The cylinder is a critical component of the engine and is subjected to significant mechanical and thermal stress in the automobile industry. Because the cylinder crown and cooling displays have such a large temperature difference, warm loads are begun in the cylinder. They are made of aluminium because of its low weight and heat conductivity. However, it is not recommended for use in high-temperature applications because to its poor hot strength and high development coefficient. To transfer power from the expanding gas to the barrel-shaped shaft, an interfacing bar and an extra segment pole are used in a motor's section bar or associating bar. For packing or removing liquid stored in chamber, syphons revolve around cylinder capacity and transmit power from driving rod to it. In the first stage, this investigation focuses on the main study of a standard cylinder made from aluminium composite. The next step is to focus research on an aluminium and cast iron cylinder. The third level of piston development should use lightweight, low-cost, and thermally safe materials. Verification of research findings by comparing them to more conventional sources

INTRODUCTION

The piston is a critical part of mechanical engineering because of its many applications. An internal combustion engine, a pneumatic cylinder, a hydraulic cylinder are all examples of mechanical systems that use pistons. Reciprocating pumps, gas compressors, pneumatic cylinders, and reciprocating engines all use pistons as mechanical components. Piston rings are used to keep the moving part of a cylinder gastight, and they are used with a piston. An important part of a motor's crankshaft is the piston rod and/or rod connector, which transfers force from rising gas in the cylinder to the crankshaft. As a result of the piston's form and exposure to structural and thermal stresses, a research is necessary. Pneumatic and reciprocating engines, pumps, compressors, and gas compressors all use pistons as moving parts. In an internal combustion (IC) engine, pressure from the expanding combustion gas in the combustion chamber acts on the piston-connecting rod assembly, which in turn transmits motion to the crankshaft. To improve engine performance, one method is to change the material of a component inside the combustion

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INTERNATIONAL JOURNAL OF APPLIED SCIENCE ENGINEERING AND MANAGEMENT

ISSN2454-9940www.ijsem.org

Vol 7, Issuse.4 OCT2019

Raspberry Pi Face Detection Door Lock

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ABSTRACT

A home security system is a need in today's world. However, the usage of keys, security cards, passwords or pattern locks to open most doors has recently been outlawed. Yet robbery and identity theft are much more dangerous repercussions of key loss than the actual loss of a key itself Consequently, this has been deemed a severe problem. A door access control system was successfully installed thanks to the usage of the Internet of Things (IoT). As well as serving as the primary controller for face recognition, youth system, and locking system, the Raspberry Pi is employed as a compact computer board that can be programmed. The guy standing in front of the entryway is captured by a camera on the wall. Whenever the system fails to recognise a person's face, a warning will be sent. Using the Internet of Things, a user may control who has access to a door (IoT). Facial recognition, Rasberry Pi, Internet of things (IOT), and home security systems are some of the terms we'll be using today.

INTRODUCTION

Video surveillance systems, in particular, rely heavily on the ability to monitor who is entering and exiting the residence. Since unique faces are a biometric trait that can be recorded, they may be used instead of passwords or pins to keep track of items. They cannot be altered or stolen since they are intrinsic to the person. Increased security may be achieved with the use of face detection technology. Because of this, a new hardware solution for identifying human faces using the Raspberry Pi has been developed. Single-board computers the size of a credit card are available from the Raspberry Pi brand. It performs like a fully functioning CPU, with the same capabilities as a desktop computer. Face-recognition technology works as follows: A camera is used to take the first picture. Each letter in the snippet of code represents a distinct personality trait. Acquired images are compared to the database's photos using a Raspberry Pi once they have been detected. Finally, whether the two faces are identical or not, it is decided. At the first sign of an intruder, an alarm will ring. The tools utilised here are easily available and may be put to use in a wide range of circumstances. A LINUX operating system and Python programming language were used to create the approach, according to the author. This database is open to all members of that particular family whose photos will be included. An warning is raised and validation is provided by visitors (a face that is not recognised, rather than a specific intruder).

As a result of this research, a new security system was developed to improve on the previous one's flaws while also increasing the system's flexibility, efficiency, and security. A security camera system may not be possible in certain circumstances because of the high costs associated with installing it. It has been used in banks, attendance systems, and authentication networks to name a few. The system is always being improved. The system will train the face

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INTERNATIONAL JOURNAL OF APPLIED SCIENCE ENGINEERING AND MANAGEMENT

ISSN2454-9940www.ijsem.org

Vol 7, Issuse.4 Oct2019

A Nonlinear Regression Application for Processing Geomagnetic Data Using Machine Learning Methods

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Abstract—

When it comes to near-surface exploration, finding unexploded ordnance, and other applications that rely on geomagnetic data, the accuracy and reliability of such data are key considerations. Based on machine learning methods, this research proposes a geomagnetic data reconstruction method for undersampled geomagnetic data. When compared to the conventional linear interpolation methods, the suggested methodology is more time efficient and lower in labour cost. The support vector machine, random forests, and gradient boosting models were all developed in this study. Recurrent neural network, a deep learning method, was also used to boost training performance. A continuous regression hyperplane was generated from a training dataset using the suggested learning methods. Using the provided regression hyperplane, the relationship between the mock-up missing data and the rest of the data is mapped out. Finally, the hyperplanes that were trained were utilised to rebuild the missing geomagnetic traces for validation, and they may be used to reconstruct further gathered fresh field data. In the end, numerical experiments were developed. When compared to the standard linear technique, our methods produced better results, with a reconstruction accuracy that was improved by 10% to 20%.

Index Terms— Modeling and reconstruction using a deep neural network with geomagnetic data

INTRODUCTION

At magnetic observations, continuous measurements of the geomagnetic field are made with a typical time period ranging from seconds to decades. It is possible that the reliability of geomagnetic data is not always guaranteed, particularly in the event of system errors [2]. If the data are under- or missing-sampled, the accuracy of the interpretation of the geomagnetic data is jeopardised [3], necessitating work on data reconstruction. Numerous approaches for reconstructing geomagnetic data have been devised to this point. [4] and [5] used numerical simulations to examine the data assimilation approach to try to forecast unknown geomagnetic field changes

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INTERNATIONAL JOURNAL OF APPLIED SCIENCE ENGINEERING AND MANAGEMENT

ISSN2454-9940www.ijsem.org

Vol 7, Issuse.4 Oct 2019

Higher-order slip characteristics, activation energy, and bioconvection in Reiner–Philippoff nanofluid flow were studied numerically.

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ABSTRACT

Research into nanofluids' enhanced thermal mechanisms, which may be used in heat transfer devices, cooling procedures, and energy generation, is the most exciting. Their significance in biomedical engineering and biotechnology is shown by nanofluids containing mobile microorganisms. Reiner–Philippoff nanofluid's accessible dynamic property is shown in this study using bioconvection applications. The magnetic force impact and activation energy properties of Reiner–Philippoff nanomaterial are also meant to undertake radiative analysis. To better understand the flow, higher-order relations are included in the slip. Thermal radiation with a nonlinear connection is used to propose changes to the energy equation. In order to solve the flow equations numerically, a shooting system is used. Analysis of the recommended parameters is provided in full. In order to study the variation in heat, mass and motile density function, numerical data is obtained With Philippoff fluid parameter, velocity profile improves but slip parameter decreases in the simulations. Temperature and concentration profiles decreased when the Philippoff fluid parameter was raised. Higher order slip is more efficient in boosting temperature, concentration, and the profiles of microorganisms.

Introduction

Nanofluids are well-known materials with innovative thermal uses in a wide range of engineering and industrial fields, as well as in numerous scientific epochs. Before certain dynamic applications in heating and cooling devices, nuclear heating and cooling devices, solar problems and magnetic retention, astronomy and safety and automated operation can be considered, nanofluids' thermophysical features must be considered. Nanoparticles are often thought of being metallic specks less than 100 nm in size. Nanofluids, unlike typical viscous liquids, are more efficient at transferring energy. Until now, nanofluids have not been studied from a thermal standpoint. These tiny nanofluids were studied by Buongiorno2 for their thermophoretic and Brownian motion. The Buongiorno model is used to illustrate the stability of nanomaterials due to Brownian and thermophoretic effects. Stagnation point phenomena affect the melting characteristics of Jeffrey nanofluid flow, which was studied by Chakraborty et al3. An extra magnetic force was added to the nanofluid issue to account for the slip characteristics. For Jeffrey nanofluid flow with a mixed convection source, Gul et al. designed an analysis that transmitted the most efficient analysis. 5 Corresponding author Ahmed et al.6 employed nanofluid. Contact information: mmbhatti at sdust.edu.cn e-mail (M.M. Bhatti). See how a verticle cylinder limits entropy formation. The dissipation characteristics of Williamson nanofluid between spinning discs were studied by Qayyum et al.7. While investigating the thermal assignment of micropolar nanofluids for cooling and heating applications, Turkyilma zoglu8 was able to correctly calculate the precise answer. In the three-dimensional investigation of Prandtl nanofluid, the involvement of higher-order chemical processes was envisioned. As a result of the theoretical nanofluid focused by Rashidis et al.10, the thermal characteristics of a convectively heated isothermal surface were evaluated. In the three-dimensional movement of nanofluids with electromagnetic and radiation applications, Amel et al.11 examined the Joule heating and slipping viewpoint. When slip effects dominate, Ibrahim12 calculated the thermal improvement of tangent hyperbolic nanofluid.

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INTERNATIONAL JOURNAL OF APPLIED SCIENCE ENGINEERING AND MANAGEMENT

ISSN2454-9940www.ijsem.org

Vol 7, Issuse.2 June 2019

Based on the Radial Power System's Distributed Generation unit's maximum load capacity

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Abstract

Distributed generation (DG) has been rising in distribution networks as a result of technological advancement, energy market liberalisation, and environmental concerns. DNOs get a number of requests each year for the installation of additional generators in their current networks. The distribution networks are expected to undergo a radical change as a result of this circumstance. In order to keep the power system stable and operational at all times, energy and service must be included in the system's overall structure. As part of this article, it was examined how DSM regulations may assist the growth of distributed generation in a particular distribution system, as well as the economic gains that utilities can get by using both distributed resources in tandem. Real-world distribution networks have been used to conduct simulations that demonstrate the impact of DSM intervention on the expansion of distributed generation (DG) and the resulting technical and economic advantages.

Key Words : Distributed Generation Unit, Radial Networks, Maximum Cost and Penalty Factor. Energy Savings, Environmental Issues and Demand Side Management.

Introduction

1.1 Distributed Generation (DG)

When a client or independent energy producer instals a power production technology at the distribution level of the electric grid, it is known as distributed generation. All on-site generating, such as solar systems serving a home or a cogeneration facility serving an office, is included in this category (Hoff.T., 2007). The definition offered intentionally omits information about the subject matter.

• Power rating and technological advancements are included in this category.

• Effects on the environment

• The area in which the goods will be delivered.

• The method of action

For example, deep and shallow connection costs, as well as protection features, are comparable for all forms of distributed generation. This allows for a more generic examination of numerous aspects.

The most important advantage of a distributed generating system is the guarantee of obtaining electricity from the utility even if your system is not operational. Renewable energy sources like solar and wind, which provide intermittent electricity, and other technologies that may need to be shut down for maintenance, need this. Management of the Demands (DSM)

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INTERNATIONAL JOURNAL OF APPLIED SCIENCE ENGINEERING AND MANAGEMENT

ISSN2454-9940www.ijsem.org

Vol 7, Issuse.2 April 2019

Factors affecting organic food consumption: A case study of Ankara

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Abstract

Our study's central topic inquires as to whether or not consumers of organic foods give environmental factors any weight when making purchases. This study was carried out in Ankara's Can kaya and Inimitable districts. This data was collected by a questionnaire, and the 'Proportional Sampling Method' was used to determine the overall number of people who regularly purchase organic foods. In order to get this information, we conducted in-person interviews with 97 consumers at these establishments. We also used the Chi-square test to see whether there was any correlation between those who consume organic food and a concern for the environment. The findings demonstrate that organic food is preferred by consumers over non-organic food, with the perceived health benefits of consuming food that has been independently proven to be chemical-free being a primary factor in this preference. Cost is a key deterrent for consumers who might otherwise choose to buy organic products. Some people choose organic produce not just because of its potential benefits to their health, but also because of their concern for the environment. The chi-square analysis suggests that customers are more concerned with their own health than the environment.

Keywords: organic food, organic food consumer, consumer behaviour, environmentally-conscious.

CONTEXT AND OBJECTIVES

Understanding customer habits is crucial for identifying consumer wants and requirements. The goal of the study of consumer behaviour is to provide an explanation for the why, how, and when of individual consumers' choice to satisfy their wants and requirements. In spite of this, customer behaviours are influenced by marketing elements, as well as socioeconomic and cultural factors2. Societies' food habits can shift in response to factors like improvements in education, the rise of the working mother, the elimination of barriers between national markets, the proliferation of information and communication technologies, the expansion of retailing options, and better access to transportation networks. Certain sorts of human behaviour in the context of making purchases have attracted the attention of researchers. Consumer behaviour is a term with several meanings. The definitions presented here are those that are most applicable to the present investigation. What we mean when we talk about "consumer behaviour" is the way in which individuals make decisions and take actions as consumers with regards to products and services that help them achieve their requirements. The definition of consumer behaviour is that it is the process through which an individual decides what goods and services to purchase, as well as from whom, how, where, and when to make those purchases. The increasing prevalence of food fraud has made it more difficult to get nutritious products. As a result, shoppers are more interested in GMOs, GMO derivatives, and items that are assuredly free of chemicals and additives. Concerned about their impact on the environment and their health, a new demographic of shoppers emerged and came to be known as "green customers." The green customer, sometimes known as the organic consumer, is a kind of shopper whose decisions are heavily influenced by ethical and ecological considerations. Studies from a wide variety of nations

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INTERNATIONAL JOURNAL OF APPLIED SCIENCE ENGINEERING AND MANAGEMENT

ISSN2454-9940www.ijsem.org
Vol 9, Issuse.2 April 2019

A Miniature Prognostic Advanced Education Technique using Random Forest

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ABSTRACT

The precept goal of the higher instructive affiliation is to offer excessive notable and important education to its understudies. the 2 desires of statistics mining in Indian guidance framework is to have a look at and enhance the account technique for later instructive facts mining propels development; the second is to protect, type out and speak approximately the substance of the very last outcomes this is created via the usage of the usage of an information mining technique. the usage of various facts mining techniques, as an instance, weird backwoods, choice tree, and so forth in Indian schooling strategies will decorate understudies' exhibition and provide a in desire of publications consistent with their well-known for dependability. This paper centers at some stage in the model portrayal for reading the numerous records mining techniques in Indian guidance framework. moreover the paper surveys a similar research of ID3, k-manner, Naïve Bayes, Random wooded vicinity calculation. in this paper, we've got have been given proposed the approach of Random wooded location to foresee the profession choice for the 12th going out understudies. the usage of Random wooded location has helped the understudies to truely receive a proper proper desire consistent with their advantage and aptitudes and acts a lifelong advertising representative tool package deal.

key terms:Indian schooling device; data Mining; Random wooded area

1. Introduction

schooling is an organization or exertion of the senior humans to spread their notion to the more youthful people of society. it's far in this manner a foundation, which assumes an crucial interest in preserving up the propagation of manner of life with the aid of using the use of coordinating someone alongside along collectively along with his desired public. in any caseknowledge, in India, the education framework has some actual lacunae[3]. in recent times the huge troubles within the instructive association are, not having increasingly proficient, a fulfillment and particular instructive techniques.these days the massive problems in the instructive association are, no longer having frequently powerful, a fulfillment and unique instructive strategies.

There exist absence of effective and enough studying in Indian instructive framework which hampers the framework the executives to get their dreams. along those traces, statistics mining is taken into consideration due to the fact the maximum appropriate innovation which gives greater expertise into the modern-day-day truely as instructive regions helping in taking
higher alternatives and frightening them to carry out efficiently. records mining innovation goes approximately as a scaffold some of the lacunas and Indian instructive framework.

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International Journal of Information Technology & Computer Engineering

ISSN 2347-3657

Volume 7,Issue 2,April 2019

Calculations for Dispersed Burden Adjusting in a Burrowing Framework with Correspondences Hacking System

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Abstract

Sensors are placed throughout the network to monitor environmental or physical conditions, and the data they gather is sent to a central station through a wireless network. Grouping is critical to the viability, efficiency, and system quality of wireless sensor networks. As far back as remote sensing systems have used central processing unit grouping, they've been around. As a result of this research, we have developed a number of mechanisms that can balance the energy consumption of these hubs and guarantee that the system has the longest lifetime feasible. Direct grouping using dispersed procedures is being created in order to connect with challenges like system lifespan and vitality.. Prior to achieving the first aim, it is necessary to meet the second goal first. The transport-layer firewalls are a particular focus of our intranet intrusion detection efforts. Internal communications can only take place inside a single department if the company's network is used by many departments. In our proposed transport proxy system architecture, well-known protocols like HTTP are represented by a pointer in the header of the transmission control protocol (80). Because of our architecture, we were able to boost network flexibility and scalability without the need for additional encapsulation. In order to verify the framework's functionality, an experimental system is put in place.

INTRODUCTION

Wi-Fi sensor nodes may be either mandatory or optional in a WSN. A large number of critical hubs rely significantly on sensors and radios. As long as you have a radio, you may use the Secondary Hub to connect to other networks. Many disciplines, including environmental monitoring, conflict zone analysis, and human services, are seeing an increase in the use of wireless sensor networks (WSNs). One must first restrict the device's vitality, memory, power, and range on the radio to establish a WSN. Sensors may be unable to transmit data because they are constrained in power consumption. Using grouping calculations that distribute data only across single-bounce neighbours is encouraged for the aim of discovering new resources. Those components that have been chosen to limit the set's variability are grouped together when a set is clustered [3].

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International Journal of
Information Technology & Computer Engineering

ISSN 2347–3657

Volume 7,Issue 2,April 2019

Designing of Circular Micro-Strip Patch Antenna by WI-MAX

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ABSTRACT: *Micro strip antennas have become very popular in the fields of cell and cell communications, following RFID programs with the appearance of various simulation devices. Novice MSA prototypes are being practiced in considered one-of-a-kind patch configurations, thought at known microwave frequencies of interest regarding exceptional substrate or high-quality strate mixtures. The overall efficiency patterns of the 3.5 GHz round patch micro strip reported antenna suitable for Wi MAX packages are investigated in this research.*

Antenna, Microstrip, Mobile, and so forth.

1. INTRODUCTION

In propagation, the antenna acts as a transducer by converting electric power currents to em-waves, and when a sign is acquired, the antenna works as a transducer by converting em-waves to electric currents. Antennas are very important in the function of contact. Antenna types include the parabolic reflector, patch antenna, slot antenna, folded dipole antenna, and others. Each antenna type is suitable for its intended purpose and location.

There are several various kinds of antennas in use these days, including the spherical micro strip patch antenna. CMP A is made up of a circular shape that radiates information on one portion of the substrate with an amazing aspect of the floor plane. CMPA has been fed with a rich resource of methods such as feeding elements and feeding coaxial probe. CMPA has been developed to utilize Rogers RT/duroid5880 (r= 2.2, h= 1.588 mm), Rogers RT/duroid5880 (r= 2.2, h= 2.87 mm), and FR4 epoxy substrates (r= 4.4, h= 2.87 mm) independently for each feeding method. The round patch antenna cavity model is evaluated in text books[1-4], and Anders G. Derneryd[2] backs it up. At 10 GHz, Manoj singh et al[6] used a substratum material with a relative permittivity (r) of 3.02 and a thickness (h) of 0.762 mm in a micro strip line feed (place feed) spherical patch antenna design. The constructed antenna has a crossover absence of -24 dB (measured) at 10 GHz. The antenna recorded a return deficit of -29.29 dB at 10.022 GHz after being designed and simulated using an HFSS method using comparable measurements, as stated in the literature[6]. F.A bound et al[8] presented a hole position model assessment of the circular patch antenna supplied by coaxial probe method, CMPA resonant frequencies found utilizing substrate material with.65 relative permittivity and 1.5875 mm thickness, and remarkable radius values.

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Dogo Rangsang Research Journal
ISSN: 2347-7180

UGC Care Group I Journal
Vol-9 Issue-01 2019

Evaluation of Deep Learning Sentiment Analysis Techniques Using Twitter Statistics

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Abstract: This take a look at provides a assessment of different deep gaining knowledge of methods used for sentiment evaluation in Twitter statistics. on this domain, deep learning (DL) strategies, which make a contribution on the equal time to the solution of a extensive variety of issues, won popularity amongst researchers. specifically, two classes of neural networks are utilized, convolution neural networks (CNN), which are particularly performant in the location of photograph processing and recurrent neural networks (RNN) which might be implemented with success in natural language processing (NLP) duties. on this paintings we compare and compare ensembles and combinations of CNN and a category of RNN the lengthy shortterm memory (LSTM) networks. moreover, we compare one of a kind phrase embedding systems including the Word2Vec and the worldwide vectors for phrase representation (GloVe) fashions. For the evaluation of those strategies we used information furnished by way of the global workshop on semantic assessment (SemEval), that's one of the most famous international workshops at the location. Diverse tests and combos are applied and best scoring values for every version are as compared in terms of their overall performance. This take a look at contributes to the sphere of sentiment analysis with the aid of analyzing the performances, blessings and barriers of the above methods with an evaluation method underneath a unmarried testing framework with the identical dataset and computing surroundings.

key phrases: sentiment evaluation, deep gaining knowledge of, convolution neural networks, LSTM, word embedding models, Twitter statistics.

INTRODUCTION:

In latest years, thanks to the boom within the use of social media, sentiment evaluation gained recognition among a wide range of human beings with different hobbies and motivations. As customers everywhere in the international have the possibility to specific their opinion approximately unique topics associated with politics, schooling, travel, subculture, commercial merchandise, or topics of well known interest, extracting knowledge from those records have become a topic of excellent significance and significance. Besides facts concerning users' visited sites, buying choices etc., knowing their emotions as they're expressed by way of their messages in diverse systems, turned out to be an essential detail for the estimation of human being's opinion about a specific problem. a very common technique is to categorise the polarity of a text in phrases of user's pride, dissatisfaction or neutrality. The polarity can vary in terms of labeling or wide variety of tiers from effective to poor but in widespread it denotes the feelings of a textual content varying from a glad to an unhappy mode. The tactics used for sentiments analysis are numerous and are primarily based on one-of-a-kind strategies of herbal language processing and system learning strategies for extracting ok functions and classifying text in suitable polarity labels. in view that some years, with the popularity that deep learning techniques have received, various deep neural networks were applied on the field with achievement. Particularly, the convolution neural networks and LSTM networks proved to be performant for sentiment analysis obligations. Various researches showed their effectiveness alone or in mixture among them. in the subject of natural language processing, most of the strategies which might be used for extracting features from words, Word2Vec and the global vectors for phrase representation (GloVe) are the most popular ones. The accuracy completed with the above strategies is high however still no longer excellent, for this reason making sentiment analysis an ongoing

Dogo Rangsang Research Journal
ISSN: 2347-7180

UGC Care Group I Journal
Vol-9 Issue-02 2019

Clinical Image Fusion Based on Sparse Representation and Feature Extraction

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Abstract: ***There are several advantages to using minimal depiction in a narrative multi-scale geometric assessment contraption over normal image depiction methods. Regardless, the typical poor representation fails to consider the unique structure and the time-multifaceted architecture. To address all of these difficulties at the same time, a novel blend segment for multimodal clinical images relying on poor depiction and decision direct is now being considered. In order to save more essentiality and edge information, three decision maps are organised, including the structure information map (SM) and the essentialness information map (EM). For example, SM has the local structure that is derived from a Gaussian Laplacian (LOG) and it also contains the essentiality and imperativeness movement characteristic that is defined by the mean square deviation (EM). In order to speed up computations, decision control is introduced to the depiction-based technique. More structure and imperativeness information may be extracted from source images using this proposed method, which further enhances the notion of the combined results. According to the results of 36 studies including CT/MRI, MR-T1/MR-T2, and CT/PET images, the technique subject to SR and SEM outmanoeuvres five of the most advanced approaches..***

1. Introduction

Medical imaging attracts more and more attention due to the increasing requirements of clinic investigation and disease diagnosis. Owing to different imaging mechanisms, medical images of different modals provide a variety of complementary information about the human body in a limited domain. For example, the computed tomography (CT) images provide better information on dense tissue, the positron emission tomography (PET) images supply better information on blood flow and tumor activity with low space resolution, and the magnetic resonance (MR) images show better information on soft tissue. Moreover, the MR-T1 images give more detailed information about anatomical structures, whereas the MR-T2 images contain a greater contrast between the normal and abnormal tissues [1–4]. However, single multiple modality cannot satisfy the demand of images with highresolution and visualization for disease diagnosis.

In this regard, medical image fusion is a useful and powerful technique for integrating complementary information from multimodality images to improve the diagnostic accuracy. Besides, the fused images are more suitable for assisting the doctors in diagnosis and treatment planning [5]: fusing MR and CT images can generate the images which can describe the soft tissue and bone in order to concurrently represent anatomical and physiological features of the human body [6, 7]. MR-T1 and MR-T2 images are fused to segment white matter lesions and guide neurosurgical resection of epileptogenic lesions [7, 8]. In oncology, the combined PET/CT imaging is helpful to view the anatomical, physiological characteristics and the tumor activity [9,10]. More than that, medical image fusion not only helpsin diagnosing diseases but also reduces the storage cost [8].As the most popular technique of the image fusion, theMultiscale decompositionmethods have developed quickly inrecent years, such as discrete wavelet transform(DWT) [3, 7],

The main contribution of this paper is as follows:

Dogo Rangsang Research Journal
ISSN: 2347-7180

UGC Care Group I Journal
Vol-9 Issue-01 2019

Direct Incorporation of Rare SCF2CF2H and SCF3Motifs Using Electrophilic Reagents

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ABSTRACT

Since fluoroalkylthioether groups exhibit unique physicochemical and pharmacokinetic properties, they have attracted a lot of interest in the drug research sector. Compounds with bioactivity, however most studies have focused Materials that can be found in SCF3 and SCF2H. Here, two electrophilic reagents generated from saccharin have been shown for the synthesis Neither the SCF2CF2H nor the SCF2CF3 motif is present in many different sequences. What I saw was their responsesmNumerous techniques for performance analysis, multigame-scale investigations, and derivatization are among those that have been explored. Nucleophiles may be found in nature or manufactured in a lab.

INTRODUCTION

The ability to modify and improve the physicochemical characteristics of compounds synthesized using fluoroalkyl motifs have shown to be of great use in a number of subfields of chemistry, including synthetic, medicinal, and agricultural chemistry. Altered molecular structures. There has been a rise in the acceptance of the so-called in recent years (1). In an effort to identify a solution, researchers have been looking at fluorinated emergent motifs2. Alternatives to the conventional CF3 and F format substituents. The role of thiofluoroalkyl motifs is vital in this massive ecosystem. Due to the establishment of the (SRF), Combinations including sulphur and fluoroalkyl chains tend to be stable and effective. Because of its high electro negativity, a compound containing three fluorine atoms is very reactive. This halogen's high electrical density, chunky, water-repellent bits. Only four of these are typically covered in a course on medicinal chemistry. Interesting since they're connected to better metabolic elements that are resistant to degradation and can traverse the cellular membrane and the blood-brain barrier to boost drug absorption. Potential picks among the applicants. When fluoroalkyl groups are added to thioethers, several additional advantages are realized. There aren't many molecules with a Hansch lipophilicity of 0.88 compared to SCF3. Not only do these communities serve as

Dogo Rangsang Research Journal
ISSN: 2347-7180

UGC Care Group I Journal
Vol-9 Issue-02 2019

Methods for the Efficient Synthesis of Gold Nanoparticles through Thermal, Sonochemical, and Electrochemical Routes, and Their Characterization

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ABSTRACT

In this research, gold nanoparticles are created by reducing a Polyvinylpyrrolidone (PVP) and tetrachloroaurate aqueous solution in three different ways: thermally, sonochemically, and electrochemically (AuNPs). PVP has been used to lessen the effects of the main byproduct, Au nanoparticles. The reactive radicals are produced in every synthesis route. Therefore, the amount of Au ions in the solution is decreased when PVP dissolves. The response surface is an effective instrument in experimental design (DOE). The experimental parameters have been fine-tuned using RSM and the Taguchi technique. Product sizes are becoming ever smaller, with the nanoscale becoming the new normal. Particles are dependent on the reaction circumstances; we investigated the impacts of a variety of variables, such as HAuCl4 concentration, molecule size, and temperature. How long it takes, in seconds, for a certain amount of PVP to undergo sonoechemical synthesis of nanoparticles in the RSM. Electrochemical methods in construction Taguchi analysis was utilized to determine the optimum interval duration, current density, and concentration for the synthesis process HAuCl4.

INTRODUCTION

Due to its importance in fundamental research, the study of nanomaterials and their manufacture has received a lot of interest as of late. Find the specific nano-scale characteristics of various materials, etc. In Nanostructures and nanoparticles made of gold, in particular because they occur often, they've been the focus of a lot of study. Several uses in chemical catalysis Medical and electrical uses of nanotechnology [1, 2]. This is the current situation: Numerous articles describing the synthesis have been published. Using nanoparticle metal [4, 5]. Lots of People this opens the door to designing nanoparticles with desired characteristics. Use of many methods, including thermal [6] processing examinations in the fields of Chemistry [7, 8], Sonochemistry [9], Electrochemistry [4, 10], and other Scientific Disciplines encompasses sonoelectrochemical

Dogo Rangsang Research Journal
ISSN: 2347-7180

UGC Care Group I Journal
Vol-9 Issue-02 2019

LIQUID-LIQUID EXTRACTION SYSTEM INCLUDING 4-(2-THIAZOLYLAZO) RESORCINOL AND 2,3,5-TRIPHENYL-2H-TETRAZOLIUM CHLORIDE FOR SPECTROPHOTOMETRIC DETERMINATION OF COBALT(II)

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ABSTRACT

The cobalt(II) - 4-(2- thiazolylazo)resorcinol (TAR) - 2,3,5-triphenyl-2H-tetrazolium chloride (TTC) - water - chloroform system was examined for complex formation and liquid-liquid extraction. Spectrophotometric measurements of the extraction yielded the best results. The interacting species' molar ratio was found to be 1:2:1. (Co:TAR:TTC). This study quantified three different equilibrium processes, including how [Co3+(TAR)]– and the tetrazoliumcation interact (Log =4.7), how the ternary complex is distributed across aqueous and organic phases (LogK =0.88), and how chloroform is extracted from water (LogK=LogD+LogK =5.6). The extraction was tested to see how extraneous ions and reagents affected it. A simple and sensitive extraction-spectrophotometric technique for the measurement of cobalt (525 ex=4.26104 l mol–1 cm–1) was devised.

Keywords include azo compound, tetrazolium salt, ternary complex, solvent extraction for cobalt (III).

INTRODUCTION

4-(2-pyridylazo)-resorcinol (PAR) and 4-(2-thiazolylazo)-resorcinol (TAR) are two examples of metal ions that create coloured binary species with azodyes [1-7]. With the addition of auxiliary chemicals [7, 8], these species may increase their colour and extraction characteristics. Reagents for liquid-phase ion-association were employed as follows: liquid extraction of $[Co(TAR)]^{z-}$ or $[Co(PAR)]^{2-}$ (z =1 or 2): zephiramine [9-12], xylometazoline hydrochlo- [13, 14], potassium-dicyclohex- yl-18-crown-6 [15], nitrogen [16], cetylpyridinium chloride [18], tetra-n-heptylammonium salts [18], tetrazolium [19] are some of the other compounds that have been used in the study. Complex generation and extraction in a Co(II), PAR, and 2,3,5-triphenyl-2H-tetrazolium chloride (TTC) system were previously reported [19]. The findings of a long-term study on a chromogenic extraction technique that uses TAR rather than PAR are reported here.

EXPERIMENTAL

Reagents and apparatus

Cobalt standard solution (1000 mg l−1; Co(NO3)2) was purchased from Merck Darmstadt (Germany). Working solutions (CCo = 1.7x10–4 mol l−1) were prepared by diluting appropriate volumes of the stock solution. TAR (97 %, Sigma-Aldrich), dissolved in slightly alkalized distilled water, 2x10–3 mol l−1. TTC (LobaFeinchemie GMBH), 3.0x10–3mol l−1 aqueous solution.

Acetate buffer solution, prepared from 2 mol l−1 aqueous solutions of CH3COOH and NH4OH. The resulting pH was checked by HI 83140 pH meter (Romania). Chloroform (additionally distilled). A Camspec M508 spectrophotometer (United Kingdom), equipped with 10 mm path-length cells.

Procedure for determining the optimum extraction-spectrophotometric conditions

Separatory funnels were used to introduce aliquots of Co(II) solution, TAR solution, TTC solution, and buffer solution (5 ml; pH varying from 3.5 to 7.0). Dissolved oxygen in distilled water to make a final volume of 10 ml. To this solution, 10 ml of chloroform was added, followed by a period of shaking the funnels (up to 5.0 min). Excessively high absorbance readings were observed in a cell using an organic extract filter paper.

Procedure for extraction-spectrophotometric deter- mination of cobalt

In a separatory funnel, an aliquot of cobalt solution (0.19 - 1.5 g ml1) was put. Once all three solutions had been introduced, 5 cc of an acidic buffer solution with pH 5.5 was added. Chloroform and 10 ml of distilled water were combined with the resultant solution, and the funnel was agitated for one minute. The light absorbance of the organic extract was measured after it was filtered through a filter paper and placed in a cell. at λ_{max} 525 nm was recorded against a blank sample.

International Journal of Gender, Science and Technology
..ISSN: 2040-0748

UGC Care Group I Journal
Vol-6 Issue-02 2019

A novel noise-adaptive two-layer ensemble model for credit scoring is based on backflow learning.

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ABSTRACT

It has become more crucial to use machine learning and artificial intelligence algorithms in categorization challenges like credit scoring. Commercial banks and loan lenders have an essential information management task: building an ensemble learning model that has been demonstrated to be more accurate and resilient than individual classifiers. Extreme gradient boosting (EGB), gradient boosting decision tree (GBT), support vector machine (SVM), random forest (RF), and linear discriminant analysis are all combined into an unique noise-adapted two-layer ensemble model for credit scoring based on backflow learning. Base classifiers may be boosted in strength and variety by using a novel backflow learning technique that retrains them on misclassified data points. Two-layer ensemble modelling is used to combine the predictions of all of the basic classifiers to provide a final predictive result. As a result, an isolation forest-based noise adaptation strategy is being suggested to solve the issue of noise data, which has long been considered a key impediment to the accuracy of prediction models. Outlier scores are calculated for each data point in the training set to identify noise data, which are then boosted to generate the noise-adapted training set. A comparison of the proposed model's performance against that of existing benchmark models is carried out using three credit datasets from the UCI machine learning library. Our suggested model outperforms other models in terms of several performance metrics, according to the findings of our experiments.

INDEX TERMSMachine learning and feature engineering are some of the terms used to describe the many aspects of credit scoring.

INTRODUCTION

It is no longer possible to make decisions based just on human expertise in today's rapidly evolving loan lending industry. The risk that consumers will be unable to pay back their debts is known as the probability of default (PD) and has received the greatest study attention among all risk management jobs [1]. Loan lenders have to make wise decisions in order to minimise losses and increase profits. In order to distinguish between "good" and "bad" consumers, the term "repayment" has been coined. Misclassifying clients will result in two separate forms of losses. If a client who is genuinely "good" is labelled "bad," the loan providers will suffer the resulting loss of revenue. Loans made to "bad" customers, on the other hand, will be non-performing and result in enormous losses. A strong PD model is essential for financial institutions to thrive in today's competitive environment [2] and optimise profits. In recent years, credit scoring has become more dependent on machine learning methods [3]. Classification difficulties may be solved using machine learning methods such as support vector machine (SVM), artificial neural network (ANN), and decision tree (DT). LDA and LR, two of the most often used statistical techniques in business despite recent advances in machine learning, remain popular because of their ease of implementation [9]. The power of ensemble classifiers is a promising study area, even though machine learning approaches may be utilised to grasp complicated models. Noise is a concern in real-world data because it reduces prediction accuracy and raises the computational cost of creating classifiers [17]. Researchers have yet to include noise data into their prediction algorithms, as far as we know. It is becoming more critical to identify noise in datasets while doing feature engineering. The goal of this research is to develop a noise detection technology that is both accurate and efficient. The isolation forest (IF) algorithm [18] is offered as a novel noise adaptation strategy for dealing with noise data. A tree-based ensemble noise detection approach with linear time complexity is the IF algorithm. Each tree formed by the IF algorithm is distinct from all other trees. It is possible to use the IF algorithm to analyse big datasets. Other noise-detection methods don't have these specific qualities. A noise-adapted training set is created by calculating the outlier score of each data point and then boosting those data points in the training set. As a result of this research, a new noise adaptive two layer ensemble model for credit rating based on backflow learning has been suggested. For starters, an outlier score is calculated for each data point and the noise data that are subsequently boosted in the training set are identified using the IF-based noise adaption (IFNA) technique. Overfitting is less likely to occur if the

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ABSTRACT

Abstract-Aspopulationisincreasing globally; we areveryconcernedforElectricity.There are various ways of electricity generation like Hydro power plant, Nuclear powerplant, Windmill plants and also Solar power plants. The former two are Non Renewablesource of energy; hencewe cannot depend only on suchtechnology. Also HarnessingEnergyfromHydroandNuclearisequallydifficult.Thela ttertwoareRenewablesourceofEnergy;nowadayswehavelotsofpow erplantsestablishedonSolarandWindTechnology.Ourprojectaimsa tDualaxisorDualdirectiontracker.TheSolarpanelusedin this system can adjust its direction both in X-Y co-ordinates. This helps better directivitywithSun rays,thusincreasingtheefficiencyofthe solarsystem.

Keywords-
DualAxis,StepperMotor,LDRSensors,DeclinationAngle

1. INTRODUCTION

Electricalenergyfromsolarpanelsisderivedbyconvertin genergyfromthesunraysintoelectricalcurrent.Themain challengeistomaximizethecaptureofthesunraysuponth esolarpanels,whichin turn maximizes the output of electricity. There are two possible ways to enhance output powerfrom solar energy based systems. Either one can use an efficient material in the manufacturing ofthephoto voltaiccellor useasolartracker to followthesun.

Why is it practically possible to install solar panel in India? The Earth is an obligated sphere,meaning that it is a sphere that is flattened at the poles and bulges around the equator. For solarpower calculations it is sufficient to consider the Earth as a simple sphere with a diameter ofapproximately12800km.PointsontheEarthssurfacear edefinedintermsoflongitudeandlatitude.TheEarthrotat esarounditsaxisevery24hoursandorbitsthesunevery36 5.25days(Approximately).Theaxisof rotationistiltedatanangle of 23.45Â° with respect to the plane of the orbit around the Sun. The axis is orientated sothatitalwayspointstowardsthePoleStar.Thisaccounts fortheseasonsandchangesinthelengthof day throughout the year. The angle between a linejoining the centers of the Sun and the Earthandthe equatorial plane is called the declination angle (). Because the axis of the Earths rotation isalwayspointingtothePoleStarthedeclinationanglecha nges astheEarthorbits theSun[3].

IndialiesintheTropicofcancerregion.Thismakesitpracti callypossibleforimplementingsolarpanelin ourcountry comparedtothecountries located beyond23.45Â°.

The dual-axis solar tracker tracks the angular height position of the sun in addition to followingthe suns east- west movement. The dual-axis works similar to single axis but it captures the solarenergymoreeffectively byrotatingitsaxis alongverticalandhorizontalaxis [1].

2. EMBEDDEDSYSTEM:

Anembeddedsystemiscombinationofcomputerhardwa reandsoftware.

Embedded system is designed for a specific function or for specific functions within alargersystem.

Industrialmachines,agriculturalandprocessindustryde vices,automobiles,medicalequipment, cameras, household appliances, airplanes, vending machines and toys as wellas mobiledevices areallpossiblelocations for anembedded system.

International Journal of Gender, Science and Technology
..ISSN: 2040-0748

UGC Care Group I Journal
Vol-8 Issue-01 2019

uses for unconventional energy sources

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Abstract—*This paper reviews the potentialities of available renewable strength resources in conjunction with numerous private and authorities future mission plans to include renewable power assets and its potentials in angle of Bangladesh. In an arising u . s . Like Bangladesh call for energy might be burgeoning. Modern, in Bangladesh dearth of power is ubiquitous and close to about 70% of its populace is excluded from access to power and bulk of the people are dwelling in rural areas. Among several renewable power resources, the utility of sun photo Voltaic (PV) is renowned despite the fact that the largest plant based on renewable energy goes into hydroelectricity. Additionally, wind, biogas, mini hydro and tidal are also well known. A plan has been initiated by the authorities of Bangladesh (GOB) to generate five% of the total strength from renewable strength assets inside 2015 and 20% with the aid of the yr of 2020. through the authorized renewable strength coverage, the GOB is dedicated to facilitate funding in both public and private sectors in renewable energy initiatives to substitute contemporaneous non-renewable strength assets and increase the contributions of renewable electricity primarily based electricity technology. With this context, evaluate of latest activities on concurrent renewable electricity assets is imperative in addition to to discover potentials of the resources. but, no longer all renewable energy sources are suitable to install indiscriminately in all areas, as a substitute there are sure parameters to select a source of RER for efficacy. After analyzing this paper, an investor gets large statistics about modern-day situation and guidance for destiny involvement of renewable electricity resources in Bangladesh. moreover, this paper could be instrumental to pick greatest efficacious renewable electricity assets for a particular place.*

Keywords— solar PV, biogas, renewable energy, rice husk.

I. INTRODUCTION

Geographically Bangladesh is situated in the north-eastern part of South Asia between 20.840 & 26.8380 North Latitude and 88.8010 & 92.8410 East Longitude. The total population is about 160 million with an average population density near about 1050 per sq. km (among the highest in the world) [1]. 70% of the population live in the rural areas of Bangladesh is seriously deprived of the access to electricity. As because the expansion of grid is inordinately expensive in the rural areas; already initiatives have been taken to popularize the use of renewable energy sources. The prospect, trend, utilization and its technology as well as reviews of the policy, institutions and opportunities based on renewable energy technology towards sustainable development and climate change mitigation has been investigated in paper [3]. A contemporary scenario of the renewable energy associated activities in Bangladesh is presented in this paper [4].

Furthermore comparing with other countries of Asia, energy consumption level is lower in Bangladesh although crisis is intense. Due to perpetual failure of power, development and welfare of the citizens have been inhibited, so the government is compelled to move into contractual agreements at high cost and adopt expedient solutions of purchasing rental

power and small IPP on an emergency basis based on diesel or liquid fuel. In Bangladesh the per capita energy consumption is one of the lowest in the region. On an average in Bangladesh per capita energy consumption is 160 kg oe (Kilogram oil equivalent) compared to 530 kg oe in India, 510 kg oe in Pakistan, 340 kg oe in Nepal and 470 kg oe in Sri Lanka [5]. The average energy consumption in Asia is 640 Kg oe. It has therefore, evinced clearly that per capita average consumption of energy in Bangladesh is lower than any other country of Asia. Long term strategy has been devised by the government for the melioration of existing debilitated energy situation in order to extenuate the financial problems. The strategy has created equilibrium approach regarding both supply increase and demand management aspects of the energy market. Energy options from the domestic sources need to be complimented with possible options for energy trade. Specifically the strategy would try to determine what can be done by the government about gas and power and to explore for various options to diversify the fuels for power generation.

International Journal of Gender, Science and Technology
..ISSN: 2040-0748

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THE CI ENGINE'S DESIGN

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Abstract:

Heavy-duty vehicle cooling systems have not kept up with technological advances in the sector. For both the automotive industry and academic researchers, fuel combustion has been a crucial issue to deal with. When it comes to temperature regulation, internal combustion engines get short shrift. The capacity of this system to manage performance, lubrication, emissions, and fuel efficiency is critical. The temperature and flow rate of the cooling fluid in the engine must be monitored and regulated. Internal combustion engine temperature control is the focus of this study. Inputs to the control system include a DC motor-controlled valve and an electronic coolant pump. Also included is a lumped parameter engine cooling system model. Using exhaust emission data, an engine cooling plan comparison will be performed soon.

Combustion engines, cooling methods, and control systems are among the subjects discussed.

INTRODUCTION:

A reciprocating engine would be incomplete without its piston. System components like pneumatic cylinders and pneumatic valves help convert chemical energy into usable (work) mechanical power. This channel is used by the connecting rod to move the expanding gas from the cylinder to the crankshaft. A piston is used to move the combustion chamber. As its name indicates, the piston is a cylindrical plug. The cylindrical form of the top is cranked up and down. The cylinder wall and piston are well-sealed thanks to piston rings. There has been an increase in interest in using internal combustion engines (IC engines) to absorb the oblique stresses and guide the connecting rod's small end. Creating power and burning fuel accounted for the great majority of engine research published in academic journals and books. Internal combustion engines tend to disregard heat transfer since they are more concerned with generating power. Internal combustion engines with significant heat transfer capacities may provide a variety of advantages. A rise in the use of fossil fuels is due to the growing consumer use of these resources. Fossil fuels' extensive usage and subsequent extraction depleted underground carbon reserves. An increase in interest in alternative fuels that take into account manufacturing, long-term development, energy efficiency, and environmental preservation has resulted as a result of this increased demand. A global lack of subsurface carbin resources might be replaced by biofuels. The issue is mostly caused by CO2 emissions from SI and CI engines. More environmentally-friendly alternatives to gasoline and diesel are being researched by scientists from throughout the world. Patents have been issued for Rudolf engine technology. There exists today's present fuel system because of Rudolf's determination to only utilise diesel as a source of fuel. A result of burning fuels is COX emissions. They are inevitable. Trifuel systems that do not need additives are being challenged by C.I. engines in order to create biofuel and reduce emissions pollutants. Discussion of the facts and conclusions is extensive.

The motors' materials prevent overheating.

Fuel consumption is reduced as a consequence of improved engine performance and efficiency.

• The quality of engine lubricant has been upgraded

Emissions from internal combustion engines have decreased.

The controllability, heat transfer capacity, noise and dependability of the engine, as well as the total cost and maintenance of the system, must all be taken into account while learning more about internal combustion engine cooling systems.

Third of the energy generated by combustion is lost to the engine cooling system; a third is lost via exhaust; and the remaining third is released through mechanical energy. (25 percent for gasoline engines, and 38 percent for diesel engines) Consequently, a significant amount of heat is likely to be generated. The engine produces a lot of heat while it is operating. After then, the heat is stored throughout the engine in various locations. Overheating specific engine components may cause significant damage to the engine's oil film, which burns and loses its lubricating characteristics.. The cooling system may also have an impact on overheating and transient thermal behaviour.

Interleaved LLC Converter with Blended Multi-Level and Section Capabilities, Enhanced Strength Processing, and Herbal Modern-Day Sharing

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Abstract- *This paper introduces a new -segment interleaved flying-capacitor LLC converter topology with high output present day applications. as compared to a traditional -section LLC converter, the new converter provides a single capacitor that contributes to lower voltage stress at the number one facet's switches, mechanically balances the modern distribution between the phases and enhances the strength processing abilities. all the attractive features of LLC converters are preserved, which include zero-voltage switching on the number one facet's MOSFETs, 0-cutting-edge switching at the secondary side's power gadgets, slim switching frequency variety and easy layout. full principle of operation and analysis of the converter are defined, as well as the converter's primary characteristics and the impact of non-best components on the modern-day sharing conduct. A 600W, 400V-to-12V experimental prototype is used as a showcase of the appealing functions of the new converter, demonstrating superb current sharing, simple implementation and excessive performance of up to 97.3%.*

Index terms –Multi-level converters, Resonant power conversion, current sharing, LLC Converters.

I. INTRODUCTION

TODAY'S power converters are required to deliver more power and achieve high efficiency over a wide load range. The LLC resonant converter topology is able to address such challenges and is advantageous in front-end DC-DC conversion applications as a result of the zero-voltage switching (ZVS) for the primary side's MOSFETs and zero-current switching (ZCS) for the secondary side's power devices [1]-[5]. In addition, it features narrow switching frequency range to facilitate regulation, fast transient response and relatively low cost mainly due to incorporation of the transformer's leakage inductance as the resonant inductor. In particular in its half-bridge implementation, the topology has been widely and successfully applied to flat panel TVs, 80+ ATX and small form factor PCs, where the requirements on efficiency and power density of their switching mode power supplies (SMPSs) are getting more and more stringent.

In high power applications where the current stress in a converter becomes high, paralleling of two (or more) converters, namely multi-phase operation, is a good solution for distribution of the current stress and it has been broadly investigated for both PWM [6]-[10] and resonant converters [11]-[13]. It has been found that multi-phase operation of LLC converters introduces implementation challenges that are typically related to the load current sharing between the converter's phases [11]-[24]. Current sharing is required to increase the power processing capability, maintain high efficiency and improve the reliability since the thermal stress is better distributed. Therefore, current sharing is considered mandatory in multi-phase LLC converters operation.

The main reason for an unbalanced load sharing between converter's phases lays in the difference between the components of the resonant networks. When interleaving phases, since the operation hinges on equivalent switching frequency of the different phases, mismatches in the resonant tank components impact the current distribution between the phases [13]. This is since only one phase operates at the frequency where the required voltage gain is achieved. Even small differences, within the resonant components values' tolerances, can have a severe effect on the current sharing and one phase will deliver most of the load current when other phases deliver a significantly smaller portion of it [19]. Several solutions have been proposed to achieve current sharing [12]-[24]. These solutions are used to match the resonant tanks components' values and can be classified as active or passive. In the active solutions, additional circuitry is added in order to control the resonant tank capacitance [13], [14] or inductance [15], to control the switching frequency [16] or to control the phase shift between the phases in case of three-phase structure [17]. However, these solutions suffer from complex control and implementation issues, high component count and high cost. The passive solutions use a common capacitor [18] or common inductor [19], [20] for

Medical image fusion wavelet-based analysis is performed using the MATLAB GUI.

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Abstarct:

Medical image fusion is a technique for combining two or more medical images into a single image that contains information from both of the recorded medical images. It is used in the field of imaging to treat patients. It is used in medical imaging to increase the accuracy of the images. The majority of the time, this strategy is employed in the diagnosis of disorders. In the field of medical imaging, MRI and CT scans are often used as source images. Medical image fusion is implemented using the Discrete Wavelet Transform (DWT), which is a discrete wavelet transform. This study analyses the use of numerous fusion algorithms to medical images that make use of wavelets such as db, coif, sym, dmey, bior, rbio, and haar, among other types of wavelets. These fusion procedures are assessed based on a number of performance criteria such as entropy, standard deviation, PSNR, NAE, and RMSE in order to identify which method is the most successful in terms of fusion efficiency.

KEYWORDS:Imagefusion,DWT, PSNR, NAE, RMSE, IDWT,CT,MRI,Entropy, Fusion rules, GUI.

I. INTRODUCTION

A technique known as image fusion is the process of combining information from many photographs into a single image that combines elements of information from each of the various photos [1. Pictures from numerous photos are merged into a single image that has the information from each of the multiple images. Image fusion is a process in which the information from many images is combined into a single image that contains the information from each of the multiple images. As a consequence, the final image should include far more information than the original images. Through the extraction of important information from the source picture, the image fusion technique reduces redundancy and uncertainty [2], and hence improves accuracy. Prior to image fusion, it is vital to undertake proper alignment of the images in order to produce a fused image that is more clearly viewed [3]. With the help of the Medical image fusion technique, we can combine two or more recorded medical images into a single image that contains the information from both of the recorded medical images. The majority of the time, this strategy is employed in the diagnosis of disorders. Imagery such as magnetic resonance imaging (MRI) and computed tomography (CT) scans are often used for this purpose since they provide doctors with useful information that may benefit them in their treatment. Many other types of fusion operations are discussed in further detail in the literature [4-5]. In the proposed work, which is a pixel-level image fusion strategy, wavelet transform-based fusion is used in combination with the wavelet transform in order to get the desired results.

The wavelet transform decomposes a picture into high frequency band and low frequency band at different levels, such as low-low, high-low, low-high, and high-high bands, depending on how much decomposition is performed on the image. Infrared low frequency bands that provide a replica picture of the original image, as well as all of the information pertaining to the original image, are known as approximation coefficients. These low frequency bands, which are referred to as approximation coefficients, are used to create these replica pictures. High frequency bands provide edge and outline information of the source image in the fused image, and it also determines the luminance change with reference to the edge information, which is referred to as detailed coefficients. High frequency bands

Journal of Management & Entrepreneurship
ISSN 2229-5348

UGC Care Group I Journal
Vol-9 Issue-02 2019

The creation of a smart vehicle using IoT and image processing

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Abstract: *Everything is being automated in the contemporary technological age because of many technologies. An automated Smart Vehicle Registry with zero human intervention is constantly needed. With the help of a single automated system, RFID (Radio Frequency Identification) and Image Processing, a vehicle and its driver may be registered as they enter a designated zone. Various efforts in the fields of RFID and image processing are reviewed in this article. The proposed system consists of an RFID system that can be used to scan the person driving the vehicle, and Image processing system that includes a camera and an open-source library to scan and record the vehicle registration plate number, and a front end that manages the input and output flow of the system. The system described in this work is designed such that analysis of the output data may be conducted quickly and simply. Additionally, this article analyses the numerous results and future tasks that may be done to enhance the system in detail.*

Keywords: *RFID, MFRC522, OCR, Arduino, Jumpers, Bread Board, Servo motor, IDE.*

I. INTRODUCTION

Using an automated mechanism, the Smart Vehicle Registry keeps track of when a vehicle enters and leaves a designated area. RFID (Radio Frequency Identification) technology and image processing are used to create this system. A gate or toll environment is used to implement this system at the beginning and conclusion of a zone or area. RFID tags are read every time a person enters or departs a designated area. The zone or territory may only be entered or exited by those who have been permitted to do so. Using an Image Processing method known as OCR, the registration plate of the car with which the individual enters or departs is scanned simultaneously (Optical Character Recognition). Depending on the level of authority, the gate will either open or stay locked until both steps have been completed. Analyses can be carried out quickly, any fraudulent submissions may be spotted and the appropriate steps are taken. Using data analysis, it is possible to uncover useful information and trends that will aid in system development.

II. LITERATURE SURVEY

Numerous scientists and engineers have created and integrated several technologies to create an automated system that allows users to authenticate and analyse data. RFID and Arduino have been used by Orji et al [1] to construct an Automatic Access Control System that restricts and authorises access. To ensure that a person's RFID tag is authenticated after being scanned by an RFID reader, the reader compares the tag's unique ID (UID) to a database entry that lists all approved UIDs. The individual is either granted permitted access or denied it based on the results of a match. An RFID reader, a tag, plus a few communication devices like an Arduino board and a computer are all that is needed to get this system up and running, and the tag and database may be configured using these tools. Xiaoxu et al. [2] conceived and implemented an intelligent access control system for offices [1]. This approach restricts entry to an office to those who have been granted permission to do so. A member of the workforce who want to join the workplace is required to verify their credentials beforehand. Employees use a scanner to read their RFID tag as he enters the building. The electronic clock reacts with a voice or an alarm after it has been scanned. To open the gate, an electronic lock unlocks and a voice from the gate states that entry has been given or an access tone [2] happens. Unless approved, the electronic lock will stay closed and an alert will sound. Using RFID readers and tags, an electronic lock and magnetic gate, and communication devices, this system may be configured. A hierarchical approach to License Plate Recognition was presented by Cheng et al [3]. The automobiles are initially spotted using deep learning methods in this approach. LPR Convolutional Neural Network (LPR CNN) is then used to distinguish characters from the plates of cars that have been spotted, reducing the number of false positives [3]. xie et al [4] suggested a robust algorithm for detecting and recognising licence plates based on a combined feature extraction model and BPNN. Low-light conditions and complex backdrops are no barrier to this system's versatility. Conventional preprocessing begins by increasing contrast and filtering out distracting elements from the picture. Integral projection is then used to locate the licence plate's location. To fully recognise licence plate characters, the vectors are trained using BPNN, followed by feature extraction. Three sets of feature combinations were used in the design of this product.

Journal of Management & Entrepreneurship
ISSN 2229-5348

UGC Care Group I Journal
Vol-8 Issue-01 2019

CHARGING YOUR PHONE WITH A COIN INSERT

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ABSTRACT

A rising number of experts say that today's communication environment and everyday living are more dependent on mobile phones. This paper describes a coin-operated automated mobile battery charger. Now, the mobile phone industry is worth billions of dollars and offers the most features in every phone that operates on a variety of operating systems. There will be a need to charge these mobile phones in public places, which should be beneficial to everyone. An LCD display shows how much time is left on a countdown timer, which is designed for use in a school context. During this moment, a relay output is latching and the finishing time is being completed, indicating that timing is taking place. Recharging mobile phones at hotels, conference centres and exhibition halls; serviced offices; exchange halls; health and training centres; golf clubs; retail outlets; shopping malls; Internet cafes; universities; colleges; dormitories; airports; and train terminals is a simple one rupee charge, among other things.KEYWORDS: Mobile Phone, Battery Charger, LCD display, PIC microcontroller.

1. INTRODUCTION

Similarly to the current environment, mobile phones have evolved into a necessary item for the majority of people. Smartphones, which are becoming more technologically advanced, are not only capable of receiving and delivering calls, but they can also store data, take images and perform a wide range of other duties. Mobile phones enable us to stay in contact with friends and family while simultaneously delivering an extremely high degree of protection to the user. Because of the increased length of time spent using the application, the quantity of power required to run the programme increases as well. We can simply charge our phones as long as our daily

routine stays the same, which is the case. But when our routine changes, or if we are on a long journey, in

an emergency, or in other unpredictable situations where we require emergency mobile charging, coin-insertion mobile charging systems play an important role, allowing people to easily charge their phones at low cost in public places at no additional cost, coin-insertion mobile charging systems play an important role. There are two pieces to this system: the coin sensor module, which recognises valid coins and tells the microcontroller, which then takes the required action; and the microcontroller, which controls the whole system. If a legitimate coin is identified, a signal is sent to the microcontroller, which controls the machine.

The charging process is then started by the microcontroller, which delivers a 5V supply to the battery via the power supply. In addition, the system now maintains note of the amount of charging that has to be done in the future. The microcontroller initiates the reverse countdown timer on its own in order to display the charging time remaining for that particular mobile phone. Any more coins entered by the user during that time period are added to the current remaining charging time by the microcontroller, which then starts the reverse countdown. When charging a mobile phone, the system makes use of renewable resources such as

Journal of Management & Entrepreneurship
ISSN 2229-5348

UGC Care Group I Journal
Vol-8 Issue-01 2019

Detection of Non-Helmet Riders and Extraction of License Plate Number using Yolo v2 and OCR Method

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ABSTRACT: ***The goal of this project is to automate the detection of traffic offences, such as failure to wear a helmet, as well as the retrieval of a vehicle's licence plate number. Using Deep Learning, there are three phases to Object Detection. YOLOv2 and YOLOv3 recognise a motorcycle or moped, a helmet, and a rider. The licence plate number is extracted using optical character recognition (OCR) (Optical character recognition).***

I. INTRODUCTION

According to India Today, bicyclists are killed in traffic accidents at a rate of more than 48,746 every year in India. By chance, 73.8 percent of them were not wearing a protective helmet. These data are correct, according to India Environment Portal [25]. Every year, a large number of people are killed in car accidents. Poor road conditions, cars that aren't working, and so on,this is exacerbated by careless driving and riding, as well as a disregard for traffic laws. However, there are ways to avoid some of them. Proper safety precautions, for example, ensure a lower accident rate and, as a result, a lower fatality rate. Despite the fact that wearing a helmet is mandatory for motorcyclists, many do not. Automatic helmet recognition and fine-tuning are among the goals of this research. When it comes to enforcing traffic laws, there is currently no automation. Certain people may be exempt from paying a fee even after infringing a traffic law due to their own negligence or other conditions. As a result of automated processes, fewer incidents like this will occur, and tougher efforts will be taken to prevent them.

1.1 Motivation:

According to the WHO's "Global Status Study on Road Safety 2018," more than 1.35 million people die and 50 million are injured each year as a result of automobile accidents around the world. A large share of this expense is borne by motorcycles, bicycles, and pedestrians. According to this research, in order to save lives, a comprehensive plan of action must be implemented. India is first in the world in terms of the number of people killed or injured in automobile accidents. According to experts, urbanization and a widespread disdain for safety precautions like as wearing a helmet and seat belt while driving are to blame.

1.2 Goal: To read the license plate of any two-wheeled vehicle, all you have to do is scan the rider's face in this project's features An OCR model is used to get the license plate information. The YOLOV2 and YOLOV 3 versions of a motorcycle can detect whether a rider is wearing a helmet and whether passengers are present.

Fig. 1(a): share of persons killed in 2019 by victim/victim vehicle categories

II.METHODOLOGY

This section explains the various processing procedures. Frames from video are captured at regular intervals during the early phase. The frames are collected and placed in a folder. They are given names that include the frame number, such as frame 7 50, frame 7 100, and so on... The frame number 50, 100, etc.... shows that this is the seventh video file input. Many frames are superfluous, as seen in the diagrams. As a result, the last frame or second frame is chosen for further processing based on the movement of the vehicle in relation to the camera.
For two scenarios, the complete job can be divided into the five phases listed below:

Combinatorial Optimization Using (Integer) Linear Programming Techniques and Metaheuristics

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Abstract:

There are a number of different strategies available for dealing with difficult optimization problems. Two particularly successful methodologies for dealing with combinatorial challenges are mathematical programming techniques, which include (integer) linear programming-based methods and metaheuristic approaches. These two organisations were created by different communities that were more or less isolated from one another. Building hybrids of mathematical programming techniques and metaheuristics has just recently gained widespread attention from academics, who have recognised the many advantages and enormous possibilities of doing so. When it comes down to it, many issues may be dealt with significantly more successfully by using synergy between these different methodologies than by using "pure" classical algorithms. How mathematical programming methods and metaheuristics should be coupled to get these benefits is the central question. In the last several years, a slew of new procedures have been introduced. In this chapter, after providing a brief introduction to the basics of integer linear programming, we review well-known solutions for such combinations and divide them into ten different methodological groups.

1 Introduction

Combinatorial optimization problems (COPs) are frequent in a broad variety of highly important and practical disciplines, and their solution is notoriously difficult due to their computational complexity. Timetable creation, setting optimal schedules for operations that will be handled on a production line, developing efficient communication networks, and containerization are all examples of jobs that fall into this category.loading, determining the most cost-effective truck routes, and a multitude of other difficulties that emerge in the transportation industryComputational biology and artificial intelligence are only a few such examples. This includes setting values for discrete variables in such a manner that an optimal solution in terms of the constraints is produced.It is established whether or not a certain goal function exists under the limits of a specific job. Constraints.

The bulk of COPs are quite difficult to settle. For example, the fact that many such problems are NP-hard [38], which is captured in theoretical computer science, is an excellent illustration of this. NP-hard COPs are frequently referred to as "hard COPs" because of their inherent complexity as well as their enormous practical relevance.In the literature, there has been a plethora of solutions for addressing difficulties that are comparable to those that have been discussed.the last couple decades The techniques available for resolving COPs may be divided into the following categories:Algorithms are separated into two types: precise algorithms and heuristic algorithms. Precision algorithms are the most exact algorithms. Precise algorithms are guaranteed to discover the optimal solution while also demonstrating that it is in fact the best response.for each and every instance in which a COP occurs Running time increases dramatically as a problem instance grows in size; yet, only small or moderately-sized issues are often impacted by this phenomenon.Cases may be treated in a realistic manner in order to attain proven maximum efficiency. In the event of more serious circumstancesMost of the time, the only choice available is to use heuristic algorithms, which trade off optimality for speed, meaning that they are intended to provide outstanding results but not necessarily the best results.providing the best possible replies in a reasonable length of timeWhen it comes to exact approaches, the methods listed below have been shown to be successful.These approaches, including branch-and-bound algorithms, dynamic programming, constraint programming, and, in particular, the vast class of integer (linear) algorithms, have achieved significant success.The use of approaches such as linear programming and other relaxation-based methods is common in this field (ILP).Techniques such as branch-and-cut, cutting plane and column generating processes, and others are available.

JuniKhyat
ISSN: 2278-4632

(UGC Care Group I Listed Journal)
Vol-9 Issue-1 2019

Automated Solar-Powered Grass Trimmer

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ABSTRACT

Environmental issues, such as pollution and power shortages, are becoming more commonplace. We've looked at creating a gadget that can do its job without producing any of the problems mentioned above as a solution to these problems. That is why we have considered starting a grass-cutting initiative that utilises solar power as a source of sustainable energy. For locations where electricity is absent, a solar-powered lawn cutting equipment is being developed. As a result, we've chosen to design a solar-powered gadget. The battery is charged via a connection that links the solar panel to the battery. The belt drive must be linked between the motor and the shaft in order for the blade to rotate. This will accelerate the blade's spin, causing it to cut the grass. This gadget will aid in the development of a more environmentally friendly system. As far as cutting grass goes, manual equipment is the most prevalent method of doing it. Researchers are working to construct a conventional robot that can mow a lawn in this study. In order to reduce the robot's excessive power consumption, a battery and a solar panel will be mounted on the robot's top. The system will include some autonomous navigation and obstacle recognition.A MOTOR, AN ULTRASONIC SENSOR, AND A SOLAR PANEL BATTERY

INTRODUCTION

There is an increase in the occurrence of environmental concerns, such as pollution, power outages, and other difficulties, in recent years. For the purpose of overcoming these concerns, we have looked into the construction of a gadget that can fulfil its tasks without generating any of the issues described above. Consequently, we have looked into the possibility of initiating an agricultural project that depends on renewable energy sources, such as solar electricity, for its operation and maintenance. It is being developed a portable solar-powered lawn cutting system that may be used in remote regions when electricity is not accessible. Consequently, we have chosen to design a gadget that is fully powered by solar energy instead of conventional energy sources. It is possible to connect the solar panel and the battery together with the aid of an electrical cable. This means that a belt drive must be connected between the motor and the blade shaft in order for the blade shaft to circle. This will cause the blade to revolve at a rapid rate, resulting in the grass being cut as a consequence of the rapid rotation. This gadget will contribute to the development of a system that is more environmentally conscious.. The most often used kind of technology for cutting grass is a manually operated machine, which is now the most prevalent. Within the scope of this study, efforts are being conducted to produce a commonplace robot that is capable of mowing the grass in a yard area on a regular basis. A portion of the navigation and other obstacle detection tasks will be automated in the system, and the power source, which will consist of a battery and a solar panel, will be mounted on the robot's top in order to alleviate the issue of excessive power consumption.

Existing system

These days we are facing the problems like pollutions, power cut problem etc. In order to overcome these problems, we have thought about the device, which can be performing its functions without causing any of these problems. So we have thought of doing the project on cutting grass, this uses the renewable source of energy for its operation likesolar energy. This project aims at developing a portable solar operated grass cutting device, as there is power shortage. Sowe have decided to make a solar energy operated device. Solar panel is connected to the battery. Then by connectinginverter to battery DC current is converted to AC current. This will run the AC motor. This motor is connected to bladeshaft by the help of belt drive. This will rotate the blade in high speed, cut the grass. This device will help in building ofeco-friendly system. Current

DESIGN AND IMPLEMENTATION OF LOW POWER VLSI DESIGN CIRCUITS USING CAD TOOLS

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ABSTRACT

In this technology, an power densities is measuring into watts per square millimetre as a raises to alarm rates, power managements are become an importance aspects of nearly each categories of the designed & applications. Reduces the power consumptions & in excess of on chips power managements is the key challenging into deep sub-micron meters nodes as increases complex. Power managements required at a consider into extremely in the early hours designed stage. Too lower power methods will be employs at every each designed stages, for RTL (Register Transfer Level) and GDSII. These are review papers is described in the different strategy, methodology & power managements technique form lowpower VLSI circuit. In expectations challenged in that may be meets through designs as to designing lowpower higher performances circuit is also discuss. Stateof theart optimized into method at various abstractions level in those targeting designs to lowpower digitals VLSI circuit is verified.

KEYWORD: Optimizations, LowPower, PowerDissipation, Power Managements

INTRODUCTION

energy dissipation has emerge as an essential layout parameter inside the format modern-day microelectronic circuits, particularly in portable computing and private conversation programs. on this paper, we survey optimization approach that concentrate on low strength dissipation in VLSIcircuits. Optimization at the circuits, commonplace sense, architectural and tool tiers are considered. sources power dissipation in CMOSgadgets are summarized via the following expression:

$$P = 1\ 2\ C\ V\ 2DD\ f \quad N \div QSC\ VDD\ f\ N \div Ileak\ VDD \quad (1)$$

wherein P denotes the overall strength, VDDdeliver voltage, and f is the frequency of operation. the number one time period represent the powers required to price and discharge circuit nodes. Node capacitance are represented by using C. The issue N is the switching pastime, i.e., the form of gate output transitions in line with clock cycle. the second time period in Eqn. 1 represents energy dissipation sooner or later of output transitions because of current flowing from the deliver to ground. This modern-day is regularly referred to as brief-circuit present day. The elementQSC represents the quantity of rate carried by means of using the quick-circuit current consistent with transition. The zero.33 term in Eqn. 1 represents static power dissipation because of leakage day I leak. device deliver and drain diffusion from parasitic diodes with bulk areas. opposite bias

JUNIKHYAT
ISSN: 2278-4632

(UGC CARE GROUP I LISTED JOURNAL)
VOL-9 ISSUE-02 2019

A Remote HRV (Heart Rate Variability) Monitoring System Based On IOT (Internet Of Things) Is Needed

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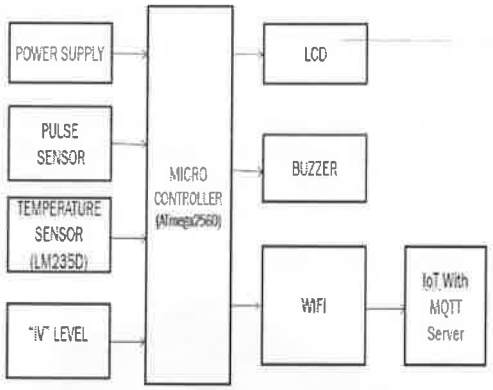
ABSTRACT

HRV (heart rate variability) is a measure of the difference between consecutive heartbeats. Coronary disease complications, diabetes, autonomous dysrhythmic illness problems, including hypertension, and a wide variety of chronic degenerative medical diseases are all sensitive to HRV study. The doctor's use of a diagnostic, prognosis tool, and the effectiveness of the treatment provided are all enhanced when HRVs are exposed to specific medical issues. Borderline individuals, including those with and without a cardiac history, are often at risk for stroke and high-risk cardiac death. When medical treatment is needed, monitoring HRV values in these high-risk circumstances may be helpful. This article describes a low-cost, simple-to-use remote HRV monitoring device for borderline hypertensive patients that utilizes Internet of Things (IoT) technology. HRV characteristics are extracted using an IoT-based pulse sensor in the proposed system.

1. INTRODUCTION

The execute design is the safest method of monitoring the patient's heart rhythm. The songs are influenced by the environment. To be able to live, the patients must be kept close together. In order of guy who it is, patient status inside the icu's add houses homes the mechanism has been discovered. Will you upload the information on the internet? What are the curing parameters going to be? This, too, can be operated remotely. the notion that anything is feasible (iot). The fundamental idea of the technique of propagation is that patients will be won by continuously tracking the proposed gadget via the internet. Heart rate and atmospheric conditions will be used to diagnose patient issues and provide support for different emotions.

BLOCK DIAGRAM:



Description OfBlock Diagram:

The block diagram for the project "AN IOT Dependent REMOTE HRV" is shown in the graphic above (Heart Rate Variability).

The following items are required for this project: 1. Microcontroller (Arduino Mega): a small built-in circuit in an embedded device that is customized for a certain process. A typical microcontroller has a single chip CPU, memory, and input/output peripherals.

2.Power Supply: A power supply is a collection of electrically powered devices that are usually found in powered components.

3. Pulse Sensor: A pulse sensor, also known as a heart rate sensor, is a device that monitors pulses and heart rate in real time.

4.Temperature sensor: A temperature sensor is a system that is designed to accurately detect the

International Journal of Information Technology & Computer Engineering

ISSN 2347-3657

Volume 7,Issue 1 ,2019

Analyzing DSM Strategies' Effects on Reliability

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Abstract— This paper aimed at resolving the power crisis of the Indian state, Tamil Nadu's power system through Demand Side Management (DSM) strategies. DSM is considered as a great tool in energy management because it enables utility consumers to satisfy the power needs with little or no increase in power generation. Energy Planning is carried out on integrated approaches involving energy supply provision and energy efficiency of demand reduction through Integrated Resource Planning. This planning envisages power demand in proportion to the generation against energy consumption patterns. A summative analysis of DSM through Load Management Program (LMP) and Energy Reduction Program (ERP) is worked out. These strategies were investigated for the increasing load demand of the future enhanced 15 years. For this investigation Wien Automatic System Planning -IV (WASP-IV) is used. For the adaptation of each strategy Load demand variations, reliability of the system through its index Energy Not Served (ENS) were investigated. The results were compared with and with no DSM strategies adaptation. Then the best suited DSM strategy is chosen for the considered power system. Chosen DSM strategy which is proposed in this paper will benefit the consumers and the State when properly implemented.

Keywords— Power system reliability, Energy Not Served, Load Management Program, Energy Reduction Program

I. INTRODUCTION

The drastic increase in population and technological developments has necessitated the corresponding increase in the consumption of power. This has made a deep impact on the proportion of demand in the power versus power generation. A gulf, thus, has evolved been bridged in this regard. While this has been the case in almost majority of developing countries, the State of Tamil Nadu in India faces acute shortage of power. With the population of more than 6.5 crore, the State has been undergoing the power demand for the last decade. The condition has become worst during the summer season when there will be a heavy consumption against unstable generation of power. Many factors either contribute or affect the proper management of power or power generation. Some of the serious factors are political uncertainty, huge risk in evolving policies, need of heavy investments and complex seasonal impacts. Thus, a time has come for the Tamil Nadu electricity authorities to explore the strategies to meet the crisis. The government is in a position to arrive at the methods to review the conventional practice of supplying power. Similarly, the government shall evoke measures to advise the public on making use of power in a judicious manner so as to bring in mutual benefit. In this regard, this paper aims at focusing an effective tool in managing power demand called Demand Side Management (DSM). However, this system requires various counts of improvement in all sides based on the reliability [1].

The function of DSM can be classified under two programs namely (a) Load Management Program (LMP) and (b) Energy Reduction Program (ERP). Of these two, ERP involves in reducing the demand through the processes that are more efficient in terms of construction or building the infrastructures. The other, LMP involves in altering the load pattern thereby focusing on less demand during the peak hours. Yet, the promotion of DSM is based on the varied patterns of different consumers involved. Generally, power generation companies look in for the reduction or shift in the consumer's energy demand. Then they execute by way of delaying or withholding further erection of generation sources leading to maximum utilization of the existing power resources.

II. RELATED WORKS

For the sake of effective analysis on DSM in terms of the reliability aspect of Tamil Nadu power system for the year 2017 [2] has been taken for consideration. Similarly, to meet over increasing load demand, different penetration level of Renewable Energy Sources (RES) with regard to the Generation Expansion Planning for Tamil Nadu has been proposed in [3]. The cost effective means in Climate Aware Generation Planning is discussed in [4]. An overview of electricity crisis in Nigeria, the policy issues and environmental ramifications of the power sector reform Act as well as dispersion modeling of emissions from Nigeria's pioneer NPP is presented in [5].

III. OUTLINE VIEW OF TAMIL NADU POWER SECTOR

In Tamil Nadu, the power supply is managed by Tamil Nadu Generation and Distribution Corporation (TANGEDCO) and it plans for the effective implantation of power generation methods. The corporation has the net installed capacity of 23,762 MW as of December 2017 [6] is shown in Table I. This includes the shares distributed by the State, Central government and Independent Power Producers (IPPs).

The cumulative contribution of various sources for this net installed capacity of 23,762 MW comes from the generation mix of i) Coal plants: 27.4%,ii) Gas plants: 4.3%,iii) Nuclear plants : 4.2% iv) Diesel plants : 1.73% v) Lignite plant: 17.4%. These sources account for 55.03% of the total installed capacity with the remaining 44.97% coming from the renewable sources. Out of this 44.97% installed capacity, wind energy accounts for 31% followed by Hydro plants with 9% and 5% put together by bio-mass and solar energy. The condition of power demand in the State of Tamil Nadu during the last five years has been very critical. Being not able to generate adequate amount of power against the

International Journal of Information Technology & Computer Engineering

ISNNO: 2347-3657

Volume 7,Issue 2 ,2019

Designing and analyzing a simply supported beam's structure

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Abstract –

For this experiment, only beams that could be readily sustained were chosen. Equilibrium is a state in which the beam does not move. Because descending forces must equal rising forces, the total moment of forces on a beam must be zero. Equilibrium. A basic supported beam may travel in any direction since it has just two points of support. With point-loaded beams, not only may bridges and buildings be improved, but also machine beds. The moment's impact on stresses, beam curvature, and beam deflection is crucial in maintaining equilibrium. Additionally, the shear force and bending moment values of a beam may vary greatly across its length.

Introduction

The method for estimating the strength of a beam is independent of the material it is made of. Choosing a beam and doing the following steps are a good place to begin.

Measuring Weight and Measurement

Structural analysis may begin after the maximum load capacity of a beam is known. Loads may be categorised into two types:

The short-term stress on a structure is referred to as a "live load" (i.e. loads from snow, wind, vehicles, etc.). The magnitude of live loads will be specified or referred to in local building regulations.

Loads permanently connected to a structure are referred to as dead loads (i.e. loads from building materials, furniture, etc.). Material weights may be used to estimate the total dead weight of a structure. Most of the time, a rough estimate is given for the dead weight.

Calculating the stress level

When designing a beam, it's important to consider stresses like bending and shear. An in-depth discussion of bending and shear stress is provided here. To estimate the bending and shear stresses, the maximum bending moment and maximum shear in the beam must be known.

If they happen in various places, I'll have to explain the math behind them in a separate piece. A beam's section modulus and cross-sectional area must be known in order to calculate its stresses. If you're looking for this information, tables like the National Design Specification (NDS) for wood beams or the AISC Steel Manual for steel beams m,ight help. The nominal maximum bending stress and the nominal maximum shear stress may be determined using the following formulas:

Determine how much stress you're under and how much you're able to bear.

As a rule, a design document indicates the maximum stresses that may be borne (like in the NDS for wood, or the AISC Steel Manual for steel). In order to determine if a beam is enough, it is necessary to compare the actual stress levels to the permitted stress levels. If the following is true, a beam is sufficient:

$$F_b > f_b$$

AND

$$F_v > f_v$$

f_b – Actual Bending Stress
f_v – Actual Shear Stress
F_b – Allowable Bending Stress
F_v – Allowable Shear Stress

Other Considerations

The sag or deflection of the beam has not been examined in detail in this text. While well-built, an object's performance might nevertheless be compromised if it deflects too much. A subsequent post will include deflection calculations.

When building a beam, think about structural design tools. Engineers may use a number of software programmes to design the beams, columns, and foundation. StruCalc, Risa, and BeamChek are examples of structural design software.

Defining a Thesis Statement

Many resources are available from Mahendran, Hong-Xia Wan, and others on this subject (2015).

International Journal of
Information Technology & Computer Engineering

ISNNO: 2347-3657

Volume 7,Issue 2 ,2019

Drowsiness Detection System Using MATLAB

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Abstract:

Despite the fact that life is a wonderful gift, it is also riddled with danger. Therefore, in order to avoid accidents from occurring, safety procedures must be implemented. Automobile collisions have risen in prominence to become one of the most important sources of insecurity in contemporary times. Maintaining a high level of vigilance while driving is extremely important to avoid accidents.It is possible that even a single minute of negligence will have catastrophic implications. The vast majority of traffic accidents occur as a result of the driver's carelessness and inaction while behind the wheel of a vehicle. Consequently, the number of traffic accidents, particularly those involving automobiles, continues to climb year after decade. As a result of drowsiness,When driving, drivers become inactive for a period of time during the journey. It is probable that earlier detection of tiredness could have prevented a number of deaths if the condition had been recognised.It has been possible to develop sleepiness detection technology thanks to the employment of machine vision-based concepts and the assistance of these concepts. Exhaustion or drowsiness must be recognised in order to be properly diagnosed and treated.Using a small camera that is pointed directly at the driver's face and that recognises the driver's eye ball movement as it moves, the driver's performance can be monitored. At the absolute least, you shouldWhen the system does its initial detection step, it looks for the presence of a face, following which it looks for the presence of eyes, and after that it determines if an eye detected is open or closed. ChangesA difference in intensity in the eye leads the eye to narrow down in size, allowing the system to receive greater information.A system notifies the driver that he or she is becoming asleep at the wheel and that it is important to wake him or her up within a set time period.

Index Terms—Viola Jones algorithm, Hough Transform, Vision Cascade Object Detector, Image Acquisition.

1 INTRODUCTION

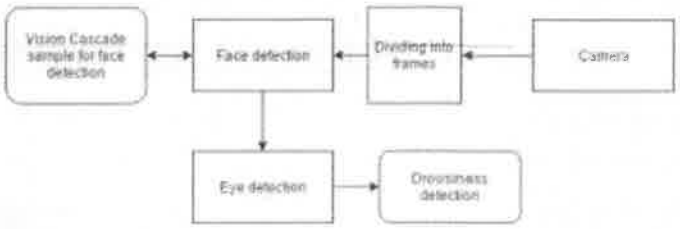

Image Acquisition (section 2.1)

It is primarily concerned with obtaining a picture of the automobile driver. With the help of a dive camera, it is possible to get it.into many frames of reference It uses a live image as its input and then processes it.It then turns those photos into a series of I characters.

2.2 Detection of Human Faces

Every frame from the frame grabber is taken by the face detection activity, which then attempts to detect the face of the automobile driver in every frame. And it is possible to accomplish this with the assistance ofSamples from the Vision Cascade.

2.3 Detection of the human eye

Following the detection of the face of the automobile driver with the facial recognition softwareThe detection function, specifically the eyes detection, can be accomplished with thewith the assistance of the eyes detecting function This can be accomplished with the use of Voila.The Jones Algorithm is a mathematical formula that calculates the probability of a certain event occurring.

International Journal of Information Technology & Computer Engineering

ISSN :2347–3657

Volume 7,Issue 3 ,2019

INTERNET-OPERATED PARKING SYSTEM

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ABSTRACT

The rapid growth of the economy has necessitated the building of more parking spaces to accommodate the growing number of automotive users. Customers are more likely to prefer mobile application-based solutions than conventional ones due to the widespread usage of smart phones. As the Internet of Things (IoT) continues to gain popularity, mobile devices, wireless communication technologies, and mobile applications are becoming more intertwined. With the help of the Internet of Things and Bluetooth, this study proposes the creation of a Smart Parking System. The complete parking solution it offers is beneficial to both property owners and visitors. For example, users may reserve space, confirm a reserved user's identity, search for nearby free spaces depending on vehicle size, go to the designated parking spot, and calculate account data on a daily, weekly and monthly basis, among other options. Infrared sensors are used to determine whether or not a parking space is available. Wi-Fi module technology, microcontrollers, and wireless communication technology are used to interact with a server to gather information about the availability of a free slot and its location. The most convenient available space in the schedule is determined by a scheduling algorithm depending on the size of the vehicle being carried. It is possible that the owner of a parking place may utilise data such as the number of free and available slots, weekday and weekend occupancy rates and the amount of money received over a certain period to determine variable parking costs for the parking space. In order to provide a positive customer experience, an app for mobile devices has been created.Keywords— Internet of Things; Smart Parking; Smart City; Cloud of Things.

1 INTRODUCTION

International Journal of Gender, Science and Technology
..ISSN: 2040-0748
UGC Care Group I Journal
Vol-8 Issue-02 2019

Fire Fighting Robot

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ABSTRACT:

Fire fighting is an important but dangerous occupation. Robots are designed to find a fire, before it rages out of control, could one day work with fire fighters greatly reducing the risk of injury to victims. I Fire Fighting Robot Competition is a contest purposely to simulate the real-world operation of an autonomous robot rescuing 10 victims (table tennis balls) and stop 5 fires (emergency candles) in a house within three minutes. The robot development is consisting of three elements which is the hardware, electronic, and programming. The robot have three DC motor, two for driving system and another single DC motor for ball suction subsystem and the fire blowing subsystem. Various sensors are also interfaced with PIC16F877A as a feedback to the robot such as photoelectric sensors, fiber optic sensor and RGB color sensors. LCD display also gives the graphical information of the robot status to the user. For the programming part, C language is used to determine the robot action gain from the sensors input.

Keywords: Fire fighting robot, wall follower, MUROC

1. Introduction

Fire fighting is the act of extinguishing destructive fires. A firefighter must be able to stop fire quickly and safely extinguish the fire, preventing further damage and rescue victims to a safer location from the hazard. Technology has finally bridged the gap between fire fighting and machines allowing for a more efficient and effective method of fire fighting. Robots were designed to find a fire, before it rages out of control. The robots could one day work with fire fighters in reducing the risk of injury to victims.

To simulate the dangerous fire fighting works, the Fire Fighting Robot Contest 2010 that was organized by University Malaysia Perlis (UNIMAP) in the first Malaysia University Robot Contest (MUROC). Fire Fighting Robot is a game based on an imaginary firefighter rescuing the victims and stops the fires.

The Fire Fighting Robot will autonomously move around the house (field) as in Figure 1 to rescue the victims (table tennis ball) as much as possible and stop the fire (standard emergency candle) in the given time.

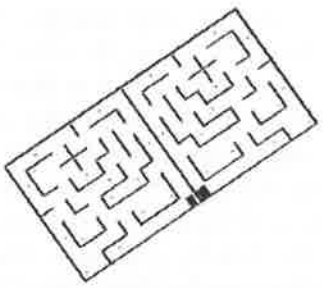

Fig. 1 The Fire Fighting Robot game field

2. Design Concept

To make sure the robot capable to complete the entire task and achieve "rescue", the robot need to be design by following the MUROC's rules. According the rules, the size of the robot is limited to a volume of 40cm x 15cm x 15cm and the maximum weight is 5Kg [1]. On top of that, the robot is needed to suck table tennis balls into the designed robot and able to stop five fires with the minimum and maximum height of standard emergency candle from 2inch to 6inch respectively. The robot also needs to navigate itself in the maze

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The M30 and M40 concrete classes' strength and durability qualities were tested using copper slag and eggshell powder.

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Abstract:
Concrete is always expected to be stronger and more durable than in the past while beingcost and energy efficient. Moreover the major advantages that concrete possesses over theconstruction materials have to be conserved. The possibility of being fabricated practicallyanywhere, the ability to make the form imposed by the shape of a mould and a low cost ofcomponents and manufacture. These factors have driven advances in improving the performance of concrete over years and continue to do so the need for improving the performance of concrete and concern for the environmental impact arising from the continually increasing demand for concrete has lead the growing use of alternative material components.
An experimental investigation will be conducted to study the properties of concrete containing copper slag as a partial replacement of fine aggregates in the concrete mix design. Various durability tests will be conducted on such concrete of M30 grade and M40 grade to know the compressive strength, split tensile strength by varying proportions of copper slag (CS) with fine aggregates by 0%, 5%, 10%, 15%, 20% and 25% and Egg shell powder(ESP) as cement by 0%, 5%, 10%, 15%, 20%, 25% by weight. The obtained results will be compared with the conventional concrete, there by knowing the changes in the properties of concrete containing copper slag as a partial replacement of fine aggregates.
Key words: Copper Slag,EggshellPowder,Compressive Strength, Split Tensile Strength

I. Introduction

Throughout the field of construction, cement and concrete production is facilitated by the use of industrial waste or secondary materials. Different companies produce new by-products and waste materials. Waste materials processing or disposal is causing environmental and safety issues. Recycling waste materials in the concrete sector therefore represents a great opportunity. By-products like fly ash, silica fume and slag have been considered waste materials for many years. Concrete prepared with these materials demonstrated improved workability and durability over normal concrete and was used for fuel, chemical plants and underwater structures. Intensive research to investigate all possible forms of recycling have been undertaken in recent decades. Building waste, explosive furnace, steel slag, ash of coal fly and low ash, as alternative aggregates in soil, highways, flooring, foundations and building, as raw substances for development of the ordinary Portland cement, as pointed out by Teikthyeluin et al (2006) have been accepted in many areas.

Copper slag is a material from an industrial by-product created by the copper process. About 2.2 tons of copper slag are produced for each ton of copper output. The copper industry in the world is estimated to produce about 24.6 million tons of slag (Gorai et al 2003). While copper layer is widely used in the sand blasting and abrasive tool manufacturing, the rest is disposed of without further recycling or reuse. The copper layer is mechanically and chemically defined as a component replacement for portland cement or as a substitute for aggregates for the material that is to be used in concrete. Copper slag for example has a variety of favourable mechanical characteristics for combined use, such as good soundness, good abrasion resistance, and recorded stability (Gorai et al 2003). Copper slag also has pozzolanic characteristics as it has low CaO. When activated by NaOH, cemented properties may be shown and can be used to substitute Portland cement either partially or completely. Copper slag has the double benefit of minimizing waste disposal costs and reducing the costs of concrete by using them for applications such as Portland concrete replacement or as a primary material.

II .Literature review

The experimental studies of Gowsika et al. (2014) on powdered eggshell (ESP) as partial replacement for cemented concrete. At 28 days of curing time ESP was substituted in 5, 10, 15,20, 25,30 percent by weight of cement and a

Dynamic Identification of an Early 20th-Century Civil Architectural Building

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Abstract

It is crucial to preserve historical buildings because of both their original construction methods and their cultural significance. To maintain these buildings in the future, restoration studies must identify their material qualities, construction procedures, and dynamic behaviours. The goal of this research is to serve as a model for comparable structures in the area that were built using lime-filled bricks and reinforced concrete slabs. In this investigation, the building's design, construction methods, and materials were examined in great depth. Flat-jack, shear, and vibration tests were used to evaluate the building's mechanical and dynamic attributes, including compressive stress, elastic moduli, shear stress, natural frequencies, and mode shapes. Modal analysis was carried out on the structure using a finite element model. The results of the vibration tests were used to confirm the model's calibration. In-situ testing are critical for ensuring the correctness of finite element models, according to the findings of this research. Finite element models can successfully utilise more than 80% of the mechanical test data.

Keywords: Timber; Masonry; Construction Technique; Operational Modal Analysis; Mechanical Tests.

1.Introduction

The building under investigation is located in the middle of Edremit's district. A quarter of a century ago, it was put up for sale. Because of its design, the structure has the makings of a contemporary architectural legacy. According to B. M. Feilden and J. Jokiletho [1], the building has several values, including the value of uniqueness, the value of rarity, the value of economics, the value of society, the value of function, and the value of politics. For decades after Mustafa Kemal Atatürk's 1934 visit, the home has been known as the Atatürk House by the residents of the neighbourhood.

Today's norms and standards are not enough for the restoration of the masonry buildings in terms of its historical aspects. The main issues are the structure's complexity, the wide variety of materials used, the many building methods used, and the lack of understanding about the progression of time and the causes of deterioration through time. In-situ testing should be used to determine the building's mechanical and dynamic qualities. Flat-jack and shear tests are the best techniques for determining the mechanical characteristics of masonry constructions. This is done by inserting a flatjack into a carved slot in the mortar and then inflating hydraulic fluid pressure into the metal plate while reading displacements continually. Researchers have relied on these strategies for decades [2-4]. The Operational Modal Analysis (OMA) test is the most often used technique for determining the dynamic characteristics of masonry structures. The dynamic characteristics, such as natural frequencies, mode shapes, and damping ratios, are determined only from output responses in this test procedure. There are a number of research that use this method.

The OMA method for determining the dynamic characteristics of masonry structures [5-13].

An accurate finite element model of the structure must be created after the in-situ testing in order to determine the building's structural behaviour. Research shows that finite element models do not adequately depict the structure's actual behaviour. This was owing to the lack of in-situ testing of the material qualities. Vibration testing were not used in several research papers, despite the fact that the material characteristics were tested. Prior to the finite element analysis of the building, determining the building's material attributes and dynamic characteristics is critical. Modal analysis findings should be compared to in-situ vibration test data to calibrate and regulate the finite element model. It is now possible for the finite element model to accurately simulate the building's behaviour. Use this model to do mass participation factors, mode forms and other structural studies such as earthquake and pushover analyses, for example. The researchers are also looking at the success of the flat-jack and shear test outcomes.

A flowchart illustrates the research process in the first section of the study. Next, the building's design, construction methods, and materials are discussed. Afterwards, the building's mechanical qualities and dynamic characteristics are

Journal of Management & Entrepreneurship
ISSN 2229-5348

UGC Care Group I Journal
Vol-08 Issue-01 2019

Techniques for Retrofitting Reinforced Concrete that are Modern

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ABSTRACT

Large sinkholes happened in a residential suburb in the State of Kuwait, resulting to damage of houses and subsequently to partial evacuation of this residential neighbourhood. From fully completed inquiry programmes, the sinkholes were linked to the presence and proliferation of Karst voids in the limestone bedrock layer. Accordingly, a thorough treatment programme was created to limit the danger of sinkhole recurrence by decreasing the possibilities of collapse in the higher level holes inside the limestone bedrock. In this project, two distinct cement grout mixes were devised and employed for treatment of the Karst cavities; cavity filling grout and permeation grout. The examination of the employed mixes comprised frequent measurement of the compressive strength, slump, thermal conductivity, thermal resistance, bleeding, air content, loss of slump, flow and setting time. The treatment was followed by an assessment procedure by drilling control boreholes. Some cores of the hardened grout were retrieved from the control boreholes and their characteristics were assessed and compared to those of laboratory specimens. This document explains several kinds and mixes of cement grouts employed in the ground treatment, features of quality control programme, and frequency and types of testing. Assessment of the findings in addition to summary of the project is also offered. The findings proved the efficacy of the numerous cement grout mixtures utilised in this treatment operation.
Keywords: Permeation and permeation management are two of the most important aspects of karst, cement, grout, and sinkholes.

Introduction

It was discovered that eight sinkhole events happened in a Kuwaiti residential neighbourhood, four of which occurred between 1988 and 1989 and the other four in 2004 (Al-Rifaiy 1990; Abdullah and Mollah 1999; Abdullah and Kamal et al. (2005)). The first sinkhole was discovered when a 15-meter diameter and 31-meter deep cylindrical hole appeared in front of a residence. Another sinkhole of similar size and depth appeared a few days later; this was followed by others in the same area. The diameters and depths of the sinkholes ranged from 1.5 to 15 metres. There was a partial evacuation after sinkhole episodes, and thorough research of the area's topography and geology led to the discovery of subsurface cavities (Al-Mutairi et al., 1998; Abdullah and Kamal, 2005; Abdullah and Kamal, 2005). Researchers discovered a 35-40-meter-thick layer of overburden soil, mostly made up of quartz sand, above the Dammam Formation Karst limestone bedrock in this residential area. Dissolution of limestone bedrock and subsequent ravelling into the underlying Karst voids are cited as the source of sinkholes. Therefore, it was decided to limit soil movement into the limestone cavities in order to fix those holes and avoid future sinkhole disasters. It was decided that cement grouting the Karst cavities would be the most effective remedy for the cavities issue in this research. Because of its low cost and simplicity of implementation, the chosen treatment method is regarded the most effective and cost-effective way to reduce sinkhole formation risk. Ground-level cement grout was injected into the limestone bedrock formation to fill up the holes and crevices underneath it. Grouts that were used in this treatment project are discussed in this study along with their compositions and amounts. Aside from a discussion of how to ensure that the treatment programme was successful, the report also explains how to conduct regular testing and what sorts of tests were used.

Background
Treatment techniques

Sinkhole restoration procedures include complete excavation and replacement, pin piles to bedrock, pressure grouting, polymer injection, and combinations of these techniques. Cost, practicality, timeliness, and efficacy of these strategies may all

Modernization of Retrofitting Techniques for Reinforced Concrete

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Abstract:

New technologies and materials have been developed and put to use throughout history to overcome the limits of previous ones. Because of the present coal regulations, many seismically vulnerable reinforced concrete buildings cannot resist earthquakes. Additionally, the seismic waves Due to a design flaw, construction flaw, increased loads, and the behaviour of existing structures are all impacted. A number of recent earthquakes have clearly shown the urgent need for structural upgrading and strengthening. A major update is one of the greatest solutions for protecting a building against future earthquakes or other natural disasters, such as hurricanes or floods.

The renovation lessens the structure's vulnerability to damage in the event of an earthquake in the near future. It seeks to strengthen a framework. Be sure you adhere to current seismic design standards. A lot of effort has been put into developing new strategies to improve the seismic performance of buildings in recent years. In relation to constructions. The purpose of this article is to offer an overview of different new and cost-effective methods. Reinforcement of damaged buildings by the use of retrofit methods. In order to improve the performance of any building, a concept known as seismic construction protection has been developed. Future quakes are expected. Future quakes are expected. There have been several earthquakes in India of varying magnitudes lately, resulting in a significant loss of life and property. Structural repairs may benefit from the use of new materials and procedures. Existing buildings that have been damaged or unaffected by earthquakes need to be reinforced.

A structural engineer's primary goal is to reconstruct the structures as quickly and effectively as feasible. In order to successfully restore a certain building, the correct materials, methods, and processes were crucial. It is clear that innovative structural restoration methods offer several benefits over traditional methods. The selection of materials for repair operations, such as steel and reinforced fibre polymers, was mentioned in certain instructions for this study. Numerous factors, seen from a variety of angles, influence the material and method selection process. The amount of money needed, the suitability of the materials, and their general applicability Repairs to buildings that have been damaged or destroyed. Standard repair materials, appropriate technology, manufacturing and conservation and preservation are used in accordance with the project's goals. Fire safety, geotechnical safety, and other similar technical factors may be part of a rehabilitation project. Environmental factors such as water penetration and storm damage may have an impact on the structural integrity of a building.

Treatments, rehabilitation, epoxy, cracks, corrosion, prevention, and retrofitting are some of the key words. There are a variety of different types of beam armoring available, including reinforced polymer fibre sleeves, steel sleeves, and concrete sleeves.

Introduction

The preservation of a historic building is described as the use of methods to preserve the structure's present shape, integrity, and materials. In order to maintain the historical, cultural, or architectural significance that the property has, it is necessary to undergo rehabilitation in order to turn it into a usable new property. When a property is restored to its original state, it is called restauration. The term "rebuilding" refers to the act of re-creating a property. For rehabilitation, it is necessary to identify the desired outcomes in advance and to gather existing building data. Rehab-focused design. The present retrofitting approach is chosen based on its current state of affairs. As a result, the existing structure's current and future performance must be determined. Factors such as performance improvement, viability, environmental impact, ease of maintenance after refurbishment, and economics should be taken into consideration while choosing a technique of retrofitting. Structural renovations are done to enhance the ability to survive. There are several distinct kinds of software. There are a wide variety of transportation and land-keeping structures and structures, as well as marine structures.

Small Furnace Experiments for Pyrolysis Models of Wood Burning

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Abstract

This article presents a study focused on the fire resistance of steel structures when solid wood cladding or OSB panels are used. The measured properties of wood at elevated temperatures are presented. Wood pyrolysis is studied with the use of available procedures for calculating the influence of pyrolysis on fire development. The development of the charred layer is studied as a desirable part that fills the insulating layer. When this effect is shown in the experiments, the charred layer slows down the heat transfer to the structure. The charred layer will last on the steel member throughout the investigation or will fall off and expose the steel member to more rapid heating. The paper presents insights identified in previous research. Our study presents the basic possibilities of access to the wood pyrolysis model. Finally, experiments in a small-scale furnace investigating the influence of pyrolysis on the development of temperatures in the test furnace and the development of the charred layer with its influence on the insulation properties are presented.

Keywords: Wood pyrolysis; Charred layer; Fire resistance; Steel structures; Cladding; OSB panels

Introduction

Fire resistance is one of the most critical areas in the design of members and entire structures of buildings to ensure the resilience of the components or system when it is exposed to the effects of fire, and to ensure rapid and safe evacuation of people in the building. Protecting the immediate vicinity of the building is also an integral aspect of the fire resistance of a structure, i.e., preventing the fire spreading to surrounding buildings. When designing wood or steel members, the limits of the materials are often underestimated to the point that, without the application of fire protection or oversizing of individual parts, members or whole structures fail very early, e.g., within 7 mins. When designing wooden structures, it is necessary to take into account wood flammability and the influence of flammability on the development of the fire, e.g., a faster increase in temperature, higher temperatures in a given compartment. The design of a structure should include the formation of a char layer and the development of a layer of pyrolysis. The standards indicate the basic procedures for the design according to empirical formulae or, for example, according to the non-linear methods presented in the Wood Handbook [1]. Steel structures that have to withstand fire for more than 15 min have to be protected from high temperatures. A foam coating, an insulation layer spray, or gypsum board material is used for fire protection. In practical applications, gypsum boardis the most widely-used material. Another option is to use wood or OSB as a protective cladding for the steel member. The challenge is that the added material is flammable. The main question is therefore how best to protect a steel structure from the effects of fire by using wood or wood-based materials in such a way that the structure continues to be classified as non-combustible. An option for laying the groundwork for an amendment to the legislation is to look at modelling and experimenting with protective steel structures. A major challenge in modelling wood burning or any wood thermal stresses is how to present correctly the thermal degradation of the material and the influence of pyrolysis, which will influence the development of a fire in a compartment. Numerical simulation or an advanced analytical calculation may be used to analyse the position of the charring line in detail. The speed of wood burning depends on many factors, in particular the intensity of the temperature load, the density and the humidity of the wood, the emissivity of the material surface, the direction of fire spread over the members (horizontal, vertical), etc. For reliable results, however, appropriate input data must be applied. Examples include the heat needed to evaporate dry wood, the precise coefficient of emissivity of the material surface, the surface temperature of the member as a function of temperature, load variation, the average temperature of pyrolysis, etc. Thecalculation is very complex, in particular due to the specific input data that are required.

Material properties of wood

Thermal conductivity

Thermal conductivity is affected by the diminishing humidity of the wood and by the formation of a layer of charring. There are two ways to accommodate the change in thermal conductivity. The first step is to change the thermal conductivity as the temperature

International Journal of Gender, Science and Technology
..ISSN: 2040-0748
UGC Care Group I Journal
Vol-7 Issue-02 2019

Measurement of Shear Stress in a Cantilever Beam Using Analytical and Numerical Techniques

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Abstract

Shear stresses are measured in a three-meter-long cantilever beam with a focused load at its free end. Three cross sections are addressed in this study: the rectangle (R); the I; and the T. Collingnon's conventional analytical equation and the finite element method (FEM) software are compared in this work to determine the maximum shear stresses. It was necessary to make use of ANSYS and SAP2000. An analytical equation and a computer programme have different conclusions when it comes to maximal shear stresses. There were 12.76 percent and 11.96 percent average discrepancies between ANSYS and SAP2000, regardless of the cross-section used to calculate them. To account for these discrepancies, cross-sectional correction variables were added to the standard analytical formula. Regardless of the cross section form, after rectification, the average discrepancies reduce to 1.48 percent and 4.86 percent.

Finite Element Methods; Analytical Equations; Comparison Analysis; Correction Factor are all terms associated with this paper.

Introduction

Beams have been employed widely in a variety of industries, including architecture, mechanics, chemistry, aerospace, and ocean engineering [1]. For structural purposes, the beam is mainly designed to withstand loads applied laterally to its axis. There are two forces operating on the cross section of a beam when it is sheared or bent: a shear force and a bending moment. Stresses in beam constructions are the subject of many introductory courses in materials and structural mechanics.

There is a great deal of complexity in studying beams since the forces and moments may change across the length of a loaded beam. Axial forces and bending moments provide normal stresses in the element, whereas shear forces and torsion moments cause shear stresses [2]. Both forms of stresses are a consequence of internal forces acting on the element's transverse section. The basic analytical equation established by Collignon [3] is often used to calculate shear stresses (). (Equation 1). Prisms of homogeneous material that exhibit linear elastic behaviour and have an internal resultant shear force that is oriented down the axis of the cross-sectional area [2] may be modelled using this equation. Calculating shear stress in this manner is done by using Collignon's formula as well as its shear force (V), as well as its cross-sectional area's neutral axis-relative initial moment of area and moments of inertia, t and I. (Q).

$$\tau = \frac{V \cdot Q}{I \cdot t}$$

Shear stress was first calculated in the late 19th century by Collingnon. When computer sciences advanced and finite element techniques (FEM) were used in structural analysis, this formula had to be re-examined. It is possible to accurately solve complicated engineering issues using the FEM numerical approach [4]. An FEM model may quickly discover the combination of material attributes or the size of pieces that best suit a structure's needs, depending on specified criteria. Utilizing FEM-based calculations, current design models are able to take into account all of a design's inherent flaws, which are not evaluated when using analytical formulae.

Analytical equations and the finite element technique (FEM) are used to evaluate the stresses in a structure. Depending on the approach used, the results may differ. It's important to recognise this variance since it's possible that both techniques will be employed at the same time while designing the same structure. FEM and analytical formulae have been utilised to compare the disparities in shear stress measurements. When a cantilever beam with a focused load at its free end was evaluated using FEM for shear stress [6], the results were impressive. The stresses were estimated for various components, such as beams, shells, planes, and solids, using FEM software, ANSYS (American computer-aided engineering software). Analytical and modelled solutions were found to vary for each element. Using the element solid as an example, these disparities reached as high as 158.27 percent, with the FEM-derived values consistently outperforming the analytical calculation. ANSYS and the Collingnon equation were also used to investigate the maximum shear stresses in a beam [7]. ANSYS's results indicated discrepancies of up to 10%, which was larger than the analytical method's. According to these experts, engineers may build a

Implementation of Transient Current Testing for Faults in SRAM

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Abstract:

In recent years, as memory devices have risen in popularity, a higher quantity of memory has been packed into each chip, and fierce market competition has upped the quality standards that are expected of the memories that are produced. The notion that failure analysis and device testing methodologies are becoming increasingly important as a result of the rising demand for dependability has been emphasised repeatedly. It has been more popular to study and research memory devices in recent years, particularly in the context of novel failure models, fault detection methodologies, and new memory architectures that have all been developed and implemented. A direct effect of this experience is that the March test is now frequently used to identify and avoid similar problems from occurring in the future. The organisation believes that some vulnerabilities in SRAM cells may go undetected during the normal March testing. In order to determine whether or not there are defects in the CMOS SRAM, a time-consuming procedure has been implemented. It is as a result of this decision that the most recent testing process is selected for usage. As part of this research effort, IDDT is being used to test for faults and issues in CMOS SRAM cells, and it is also being used to test for flaws and issues in CMOS SRAM cells as part of a separate study of the same name. In either case, a transient current pulse generated during a transition write operation or a transition read operation may be monitored for system failures, allowing them to be discovered and remedied. For the purpose of detecting and measuring the transient current pulse, it is required to design a circuit for monitoring current.SRAM, memory testing, the March algorithm, the IDDT, and the current sensor circuit are just a few of the terms that appear in this document.

I. INTRODUCTION

In order to get higher performance in order to meet the demands of today's and tomorrow's applications, today's systems on chips (SoCs) are changing from being dominated by logic to being dominated by memory. [1] [2] Memories are expected to account for 90 percent of all semiconductor chip area by 2013, according to the International Technology Roadmap for Semiconductors (ITRS), with static random access memory (SRAM) accounting for the vast majority of this space. This means that the yield of the memory has a significant impact on the total yield of the SoC. Figure 1: Memory yield. Figure 1 shows a diagram of a compass. The concept of memory yield is introduced. Devices whose sizes have been drastically reduced are witnessing an increase in the number of failures they experience. Because it has a higher number of hardware components than other circuits, the memory unit is frequently the component in a computer system that has the lowest level of dependability, according to industry standards. The SRAM memory cell has the highest density when compared to other logic circuits because of its high density; yet, due of its high density, it is also the most prone to failure when compared to other logic circuits. Aside from that, changes in the manufacturing process have an influence on the functioning of memory, and as technology advances, these inconsistencies are becoming more prevalent across the board in the industry.

It follows that the test cost of memory will have a significant influence on the test cost of SOCs in this case as a result of this. The cost of memory during the exam is depicted in Figure 1. It is possible to generate less product when there are faults in the memory because the presence of errors in the memory reduces the quantity of product that can be produced. In the case of mission-critical systems, the use of these methodologies has the potential to result in the failure of the system under discussion. Consequently, it is vital to use suitable testing processes in order to reduce costs while preserving efficiency, consequently improving the overall quality of the product produced. A variety of fault models are employed in SRAM testing to discover potential difficulties. These include stuck-at faults, transition faults, and coupling faults, to name a few. As proved by the March tests [3] and [4], it has been routinely utilised to find these flaws in order to expose them to the public. These detection procedures, on the other hand, need a large

DESIGN PRINCIPLES FOR UNDERWATER WINDOW BAND ANTENNAS AND ESSENTIAL PROPERTIES

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Abstract

Right present, fundamental ultra-wide-band (UWB) radiation standards are being shown and evaluated. The discussion begins with an overview of how recovering wires affects UWB transmission. In time and in the recurrence field, the parameters characterizing the radio wires are computed. Because the number of potential receiving apparatus structures is almost limitless, the emphasis would be on characterisation as shown by various radiation standards. With each of these instruments, the standard points of significance and limits are discussed, as well as a sample radio wire and its properties. For a distant architect, the primary problem is the appropriate construction of a receiving device with optimal radiation characteristics. The conclusion of this article is that although there are many UWB radio wires available, not all of them are appropriate for every application, especially in terms of radar and communication framework requirements.

KEYWORDS | Ultra-wide-band (UWB); UWB antenna characterisation; UWB relationship; UWB switch functionalities

1. Introducing

Thin band radio wires and engendering are frequently portrayed in the recurrence area. Over a band width of two or three thousand, the mark qualities are thought to stay stable. For super wide-band (UWB) frameworks, the recurrence subordinate attributes of the recieving wires and the recurrence subordinate exercises of the channel should be considered. In a motivation based innovation, then again, UWB structures are constantly delivered, in this way time-space impacts and attributes should likewise be perceived [1]. Therefore, both a recurrence area and a period space portrayal of the gadget's understanding are required. The recurrence space and worldly area portrayals of these portrayals are displayed beneath. All standards are reliably used all through the article,

despite the fact that they may not really match to the meaning given in the writing referred to. The

facilitate framework utilized in this examination is displayed in Fig. 1.

A. The UWB Frequency-Domain Signal Relationship is Characterized

For the recurrence area definition, the communicate radio wire ought to be animated with a constant wave sign of recurrence f. Coming up next are the necessary boundaries for characterizing a recurrence space relationship:

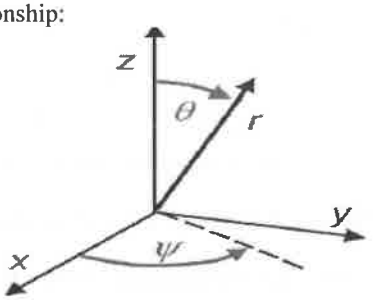

Fig. 1. Coordinate system for UWB link and antenna characterization.Description of a free space UWBpropagation link is given by (2)

$$\frac{U_{Rx}(f)}{\sqrt{Z_{C,Rx}}} = \mathbf{H}_{Rx}^{T}(f,\theta_{Rx},\psi_{Rx}) \cdot \frac{e^{j\omega\tau_{Tx,Rx}/c_0}}{2\pi r_{Tx,Rx} c_0} \cdot \mathbf{H}_{Tx}(f,\theta_{Tx},\psi_{Tx}) \cdot j\omega \frac{U_{Tx}(f)}{\sqrt{Z_{C,Tx}}}. \quad (2)$$

As recently referenced, two symmetrical polarizations are used in the Tax and Rx move capacities. Albeit the radiation points in narrowband frameworks just effect the sign's polarization, plentifulness, and stage, they regularly influence the entire recurrence subordinate sign properties in UWB frameworks. The transmission lattice of the recurrence subordinate polar metricchannel [3] might be utilized to depict the channel sway for UWB associations in rich dispersing circumstances, for example, inside.

B. Signal Relationship Time-Domain Characterization For the time-area clarification, it is accepted that the communicating radio wire is animated by a motivation. Coming up next are the components of the UWB time space connection's portrayal:

DUALAXISSOLARTRACKER

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ABSTRACT

Abstract-Aspopulationisincreasing globally; we areveryconcernedforElectricity.There are various ways of electricity generation like Hydro power plant, Nuclear powerplant, Windmill plants and also Solar power plants. The former two are Non Renewablesource of energy; hencewe cannot depend only on suchtechnology. Also HarnessingEnergyfromHydroandNuclearisequallydifficult.Thela ttertwoareRenewablesourceofEnergy;nowadayswehavelotsofpow erplantsestablishedonSolarandWindTechnology.Ourprojectaimsa tDualaxisorDualdirectiontracker.TheSolarpanelusedin this system can adjust its direction both in X-Y co-ordinates. This helps better directivitywithSun rays,thusincreasingtheefficiencyofthe solarsystem.

Keywords-
DualAxis,StepperMotor,LDRSensors,DeclinationAngle

1. INTRODUCTION

Electricalenergyfromsolarpanelsisderivedbyconvertin genergyfromthesunraysintoelectricalcurrent.Themain challengeistomaximizethecaptureofthesunraysuponth esolarpanels,whichin turn maximizes the output of electricity. There are two possible ways to enhance output powerfrom solar energy based systems. Either one can use an efficient material in the manufacturing ofthephoto voltaiccellor useasolartracker to followthesun.

Why is it practically possible to install solar panel in India? The Earth is an obligated sphere,meaning that it is a sphere that is flattened at the poles and bulges around the equator. For solarpower calculations it is sufficient to consider the Earth as a simple sphere with a diameter ofapproximately12800km.PointsontheEarthssurfacear edefinedintermsoflongitudeandlatitude.TheEarthrotat esarounditsaxisevery24hoursandorbitsthesunevery36 5.25days(Approximately).Theaxisof rotationistiltedatanangle of 23.45Â° with respect to the plane of the orbit around the Sun. The axis is orientated sothatitalwayspointstowardsthePoleStar.Thisaccounts fortheseasonsandchangesinthelengthof day throughout the year. The angle between a linejoining the centers of the Sun and the Earthandthe equatorial plane is called the declination angle (). Because the axis of the Earths rotation isalwayspointingtothePoleStarthedeclinationanglecha nges astheEarthorbits theSun[3].

IndialiesintheTropicofcancerregion.Thismakesitpracti callypossibleforimplementingsolarpanelin ourcountry comparedtothecountries located beyond23.45Â°.

The dual-axis solar tracker tracks the angular height position of the sun in addition to followingthe suns east- west movement. The dual-axis works similar to single axis but it captures the solarenergymoreeffectively byrotatingitsaxis alongverticalandhorizontalaxis [1].

2. EMBEDDEDSYSTEM:

Anembeddedsystemiscombinationofcomputerhardwa reandsoftware.

Embedded system is designed for a specific function or for specific functions within alargersystem.

Industrialmachines,agriculturalandprocessindustryde vices,automobiles,medicalequipment, cameras, household appliances, airplanes, vending machines and toys as wellas mobiledevices areallpossiblelocations for anembedded system.

Uses for unconventional energy sources

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Abstract—*This paper reviews the potentialities of available renewable strength resources in conjunction with numerous private and authorities future mission plans to include renewable power assets and its potentials in angle of Bangladesh. In an arising u . s . Like Bangladesh call for energy might be burgeoning. Modern, in Bangladesh dearth of power is ubiquitous and close to about 70% of its populace is excluded from access to power and bulk of the people are dwelling in rural areas. Among several renewable power resources, the utility of sun photo Voltaic (PV) is renowned despite the fact that the largest plant based on renewable energy goes into hydroelectricity. Additionally, wind, biogas, mini hydro and tidal are also well known. A plan has been initiated by the authorities of Bangladesh (GOB) to generate five% of the total strength from renewable strength assets inside 2015 and 20% with the aid of the yr of 2020. through the authorized renewable strength coverage, the GOB is dedicated to facilitate funding in both public and private sectors in renewable energy initiatives to substitute contemporaneous non-renewable strength assets and increase the contributions of renewable electricity primarily based electricity technology. With this context, evaluate of latest activities on concurrent renewable electricity assets is imperative in addition to to discover potentials of the resources. but, no longer all renewable energy sources are suitable to install indiscriminately in all areas, as a substitute there are sure parameters to select a source of RER for efficacy. After analyzing this paper, an investor gets large statistics about modern-day situation and guidance for destiny involvement of renewable electricity resources in Bangladesh. moreover, this paper could be instrumental to pick greatest efficacious renewable electricity assets for a particular place.*

Keywords— solar PV, biogas, renewable energy, rice husk.

I. INTRODUCTION

Geographically Bangladesh is situated in the north-eastern part of South Asia between 20.840 & 26.8380 North Latitude and 88.8010 & 92.8410 East Longitude. The total population is about 160 million with an average population density near about 1050 per sq. km (among the highest in the world) [1]. 70% of the population live in the rural areas of Bangladesh is seriously deprived of the access to electricity. As because the expansion of grid is inordinately expensive in the rural areas; already initiatives have been taken to popularize the use of renewable energy sources. The prospect, trend, utilization and its technology as well as reviews of the policy, institutions and opportunities based on renewable energy technology towards sustainable development and climate change mitigation has been investigated in paper [3]. A contemporary scenario of the renewable energy associated activities in Bangladesh is presented in this paper [4].

Furthermore comparing with other countries of Asia, energy consumption level is lower in Bangladesh although crisis is intense. Due to perpetual failure of power, development and welfare of the citizens have been inhibited, so the government is compelled to move into contractual agreements at high cost and adopt expedient solutions of purchasing rental

power and small IPP on an emergency basis based on diesel or liquid fuel. In Bangladesh the per capita energy consumption is one of the lowest in the region. On an average in Bangladesh per capita energy consumption is 160 kg oe (Kilogram oil equivalent) compared to 530 kg oe in India, 510 kg oe in Pakistan, 340 kg oe in Nepal and 470 kg oe in Sri Lanka [5]. The average energy consumption in Asia is 640 Kg oe. It has therefore, evinced clearly that per capita average consumption of energy in Bangladesh is lower than any other country of Asia. Long term strategy has been devised by the government for the melioration of existing debilitated energy situation in order to extenuate the financial problems. The strategy has created equilibrium approach regarding both supply increase and demand management aspects of the energy market. Energy options from the domestic sources need to be complimented with possible options for energy trade. Specifically the strategy would try to determine what can be done by the government about gas and power and to explore for various options to diversify the fuels for power generation.

THE CI ENGINE'S DESIGN

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Abstract:

Heavy-duty vehicle cooling systems have not kept up with technological advances in the sector. For both the automotive industry and academic researchers, fuel combustion has been a crucial issue to deal with. When it comes to temperature regulation, internal combustion engines get short shrift. The capacity of this system to manage performance, lubrication, emissions, and fuel efficiency is critical. The temperature and flow rate of the cooling fluid in the engine must be monitored and regulated. Internal combustion engine temperature control is the focus of this study. Inputs to the control system include a DC motor-controlled valve and an electronic coolant pump. Also included is a lumped parameter engine cooling system model. Using exhaust emission data, an engine cooling plan comparison will be performed soon.

Combustion engines, cooling methods, and control systems are among the subjects discussed.

INTRODUCTION:

A reciprocating engine would be incomplete without its piston. System components like pneumatic cylinders and pneumatic valves help convert chemical energy into usable (work) mechanical power. This channel is used by the connecting rod to move the expanding gas from the cylinder to the crankshaft. A piston is used to move the combustion chamber. As its name indicates, the piston is a cylindrical plug. The cylindrical form of the top is cranked up and down. The cylinder wall and piston are well-sealed thanks to piston rings. There has been an increase in interest in using internal combustion engines (IC engines) to absorb the oblique stresses and guide the connecting rod's small end. Creating power and burning fuel accounted for the great majority of engine research published in academic journals and books. Internal combustion engines tend to disregard heat transfer since they are more concerned with generating power. Internal combustion engines with significant heat transfer capacities may provide a variety of advantages. A rise in the use of fossil fuels is due to the growing consumer use of these resources. Fossil fuels' extensive usage and subsequent extraction depleted underground carbon reserves. An increase in interest in alternative fuels that take into account manufacturing, long-term development, energy efficiency, and environmental preservation has resulted as a result of this increased demand. A global lack of subsurface carbin resources might be replaced by biofuels. The issue is mostly caused by CO2 emissions from SI and CI engines. More environmentally-friendly alternatives to gasoline and diesel are being researched by scientists from throughout the world. Patents have been issued for Rudolf engine technology. There exists today's present fuel system because of Rudolf's determination to only utilise diesel as a source of fuel. A result of burning fuels is COX emissions. They are inevitable. Trifuel systems that do not need additives are being challenged by C.I. engines in order to create biofuel and reduce emissions pollutants. Discussion of the facts and conclusions is extensive.

The motors' materials prevent overheating.

Fuel consumption is reduced as a consequence of improved engine performance and efficiency.

• The quality of engine lubricant has been upgraded

Emissions from internal combustion engines have decreased.

The controllability, heat transfer capacity, noise and dependability of the engine, as well as the total cost and maintenance of the system, must all be taken into account while learning more about internal combustion engine cooling systems.

Third of the energy generated by combustion is lost to the engine cooling system; a third is lost via exhaust; and the remaining third is released through mechanical energy. (25 percent for gasoline engines, and 38 percent for diesel engines) Consequently, a significant amount of heat is likely to be generated. The engine produces a lot of heat while it is operating. After then, the heat is stored throughout the engine in various locations. Overheating specific engine components may cause significant damage to the engine's oil film, which burns and loses its lubricating characteristics.. The cooling system may also have an impact on overheating and transient thermal behaviour.

Medical image fusion wavelet-based analysis is performed using the MATLAB GUI.

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Abstarct:

Medical image fusion is a technique for combining two or more medical images into a single image that contains information from both of the recorded medical images. It is used in the field of imaging to treat patients. It is used in medical imaging to increase the accuracy of the images. The majority of the time, this strategy is employed in the diagnosis of disorders. In the field of medical imaging, MRI and CT scans are often used as source images. Medical image fusion is implemented using the Discrete Wavelet Transform (DWT), which is a discrete wavelet transform. This study analyses the use of numerous fusion algorithms to medical images that make use of wavelets such as db, coif, sym, dmey, bior, rbio, and haar, among other types of wavelets. These fusion procedures are assessed based on a number of performance criteria such as entropy, standard deviation, PSNR, NAE, and RMSE in order to identify which method is the most successful in terms of fusion efficiency.

KEYWORDS:Imagefusion,DWT, PSNR, NAE, RMSE, IDWT,CT,MRI,Entropy, Fusion rules, GUI.

I. INTRODUCTION

A technique known as image fusion is the process of combining information from many photographs into a single image that combines elements of information from each of the various photos [1. Pictures from numerous photos are merged into a single image that has the information from each of the multiple images. Image fusion is a process in which the information from many images is combined into a single image that contains the information from each of the multiple images. As a consequence, the final image should include far more information than the original images. Through the extraction of important information from the source picture, the image fusion technique reduces redundancy and uncertainty [2], and hence improves accuracy. Prior to image fusion, it is vital to undertake proper alignment of the images in order to produce a fused image that is more clearly viewed [3]. With the help of the Medical image fusion technique, we can combine two or more recorded medical images into a single image that contains the information from both of the recorded medical images. The majority of the time, this strategy is employed in the diagnosis of disorders. Imagery such as magnetic resonance imaging (MRI) and computed tomography (CT) scans are often used for this purpose since they provide doctors with useful information that may benefit them in their treatment. Many other types of fusion operations are discussed in further detail in the literature [4-5]. In the proposed work, which is a pixel-level image fusion strategy, wavelet transform-based fusion is used in combination with the wavelet transform in order to get the desired results.

The wavelet transform decomposes a picture into high frequency band and low frequency band at different levels, such as low-low, high-low, low-high, and high-high bands, depending on how much decomposition is performed on the image. Infrared low frequency bands that provide a replica picture of the original image, as well as all of the information pertaining to the original image, are known as approximation coefficients. These low frequency bands, which are referred to as approximation coefficients, are used to create these replica pictures. High frequency bands provide edge and outline information of the source image in the fused image, and it also determines the luminance change with

Creating Connecting Rod Designs

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ABSTRACT

Connecting rod is the intermediate link between the piston and the crank. And is responsible to transmit thepush and pull from the piston pin to crank pin, thus converting the reciprocating motion of the piston to rotary motionof the crank. Generally connecting rods are manufactured using carbon steel and in recent days aluminium alloys arefinding its application in connecting rod. The aim of our project is to design a connecting rod for a two wheeler using theoretical calculations, designing withsolid works software.

INTRODUCTION TO CONNECTING ROD

A connecting rod, also called a con rod, is the part of a piston engine which connects the piston to the crankshaft. Together with the crank, the connecting rod converts the reciprocating motion of the piston into the rotation of the crankshaft. The connecting rod is required to transmit the compressive and tensile forces from the piston, and rotate at both ends.

The predecessor to the connecting rod is a mechanic linkage used by water mills to convert rotating motion of the water wheel into reciprocating motion. The most common usage of connecting rods is in internal combustion engines or on steam engines.

The earliest evidence for a connecting rod appears in the late 3rd century AD Roman Hierapolis sawmill. It also appears in two 6th century Eastern Roman saw mills excavated at Ephesus respectively Gerasa. The crank and connecting rod mechanism of these Roman watermills converted the rotary motion of the waterwheel into the linear movement of the saw blades.

In Renaissance Italy, the earliest evidence of a – albeit mechanically misunderstood – compound crank and connecting-rod is found in the sketch books of Taccola. A sound understanding of the motion involved displays the painter Pisanello (d. 1455) who showed a piston-pump driven by a water-wheel and operated by two simple cranks and two connecting-rods.

By the 16th century, evidence of cranks and connecting rods in the technological treatises and artwork of Renaissance Europe becomes abundant; Agostino Ramelli's The Diverse and Artifactitious Machines of 1588 alone depicts eighteen examples, a number which rises in the Theatrum Machinarum Novum by Georg Andreas Böckler to 45 different machines

Internal combustion engines

A connecting rod for an internal combustion engine consists of the 'big end', 'rod' and 'small end' (or 'little end'). The small end attaches to the gudgeon pin (also called 'piston pin' or 'wrist pin'), which can swivel in the piston. Typically, the big end connects to the crankpin using a plain bearing to reduce friction; however some smaller engines may instead use a rolling-element bearing, in order to avoid the need for a pumped lubrication system.

Typically there is a pinhole bored through the bearing on the big end of the connecting rod so that lubricating oil squirts out onto the thrust side of the cylinder wall to lubricate the travel of the pistons and piston rings. A connecting rod can rotate at both ends, so that the angle between the connecting rod and the piston can change as the rod moves up and down and rotates around the crankshaft.

Materials

In mass-produced automotive engines, the connecting rods are most usually made of steel. In high performance applications, "billet" connecting rods

Dogo Rangsang Research Journal
ISSN: 2347-7180

UGC Care Group I Journal
Vol-9 Issue-02 2019

Local rammed earth's compressive strength and its relationship to moisture content

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Abstract

Finding sustainable and economical materials for building construction is a vital topic recently due to the negative effects of some current construction materials on the environment and also its relatively high cost. Local materials can be considered as a suitable alternative for building construction materials to minimize the environmental impacts. For example, rammed earth construction type uses local materials which typically consist of a mixture of gravel, sand, clay, and silt. Cement can be added with low fractions as a stabilizer and to improve the mechanical properties of rammed earth, such as compressive strength. This study focuses on assessing the moisture content effect on the compressive strength of the cement stabilized local rammed earth materials. A number of samples with various moisture content, i.e. 4%, 6%, 10%, and 14% were established and examined using a universal test machine in this study. The moisture content is found to significantly affect the compressive strength of the stabilized rammed earth local materials. Samples with 10% moisture content reached the highest compressive strength (average is 4 MPa) compared with others. Samples with 4% moisture content have the least compressive strength, i.e. average is 1.97 MPa.

IndexTermsrammed earth, alternative construction materials, cement stabilized rammed earth, sustainable building material

INTRODUCTION

The world tends to try to build the earth and live on it without negatively affecting the nature, whether on the ground, the weather, or organisms. For thousands of years, people have been using natural materials fairly well such as soil in construction, especially in dry areas. In many regions of the Middle East in general and the Kingdom of Saudi Arabia in particular, there are different models of construction by using soil, and that reflects the cultural identity and the unique construction style of each region. In Najed region, there are huge amounts of soil, which motivates us to utilize and exploit these natural materials to develop effective, sustainable, low-cost construction materials. Rammed earth wall is one of the construction methods that have been used in many countries of the world, such as China, Australia, and some countries inEurope, North Africa, and North and South America from many years ago, and this method mainly depends on in site soil. The Construction using rammed earth materials, used in building walls, is developed by mixing the in-site soil, gravel, and clay at varying rates with water in a gradual way until it is wet and not reaching the level of liquidity. Then, the wall formwork is made and the mixture will be placed in layers with a thickness of about 20 cm, then compact each layer with a specific weight and number of compacts. After a while, the wall framework will be unfolded. However, rammed earth materials are vulnerable in durability and weak in compressive strength compared with other construction materials. Thus, cement is added to stabilize the walls and reduce renovation [1-3]. Natural and synthetic fibers are also included in the rammed earth materials to improve their mechanical characteristics [4, 5]. The scope of adding and modifying the materials of this construction method remains related to each region according to the available natural materials and then studying the structural properties, making the necessary tests, and assessing the mechanical properties of the material. There are some codes that exist for rammed earth such as IS: 2110 Code of practice for in situ construction of walls in buildings with soil–cement, Bureau of Indian Standards, New Delhi, India, and NZS: 4297, NZS: 4298, and NZS: 4299 codes from New Zealand provide specifications for the construction of rammed earth apart from other earth building methods [6]. Thus, this study will characterize the mechanical properties of the local soils available in Qassim region in Saudi Arabia, so to be used as material compositions of the rammed earth. The work focuses on examining on compressive strength of the rammed earth material while varying the percentages of moisture content.

LITERATURE REVIEW

Reviews of some papers on rammed earth construction are highlighted below. There are many studies and investigations on soil stabilization as applicable to the construction. Various studies have drawn limitations for the

International Journal of Gender, Science and Technology
..ISSN: 2040-0748

UGC Care Group I Journal
Vol-8 Issue-02 2019

Interleaved LLC Converter with Blended Multi-Level and Section Capabilities, Enhanced Strength Processing, and Herbal Modern-Day Sharing

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Abstract- *This paper introduces a new -segment interleaved flying-capacitor LLC converter topology with high output present day applications. as compared to a traditional -section LLC converter, the new converter provides a single capacitor that contributes to lower voltage stress at the number one facet's switches, mechanically balances the modern distribution between the phases and enhances the strength processing abilities. all the attractive features of LLC converters are preserved, which include zero-voltage switching on the number one facet's MOSFETs, 0-cutting-edge switching at the secondary side's power gadgets, slim switching frequency variety and easy layout. full principle of operation and analysis of the converter are defined, as well as the converter's primary characteristics and the impact of non-best components on the modern-day sharing conduct. A 600W, 400V-to-12V experimental prototype is used as a showcase of the appealing functions of the new converter, demonstrating superb current sharing, simple implementation and excessive performance of up to 97.3%.*

Index terms –Multi-level converters, Resonant power conversion, current sharing, LLC Converters.

I. INTRODUCTION

TODAY'S power converters are required to deliver more power and achieve high efficiency over a wide load range. The LLC resonant converter topology is able to address such challenges and is advantageous in front-end DC-DC conversion applications as a result of the zero-voltage switching (ZVS) for the primary side's MOSFETs and zero-current switching (ZCS) for the secondary side's power devices [1]-[5]. In addition, it features narrow switching frequency range to facilitate regulation, fast transient response and relatively low cost mainly due to incorporation of the transformer's leakage inductance as the resonant inductor. In particular in its half-bridge implementation, the topology has been widely and successfully applied to flat panel TVs, 80+ ATX and small form factor PCs, where the requirements on efficiency and power density of their switching mode power supplies (SMPSs) are getting more and more stringent.

In high power applications where the current stress in a converter becomes high, paralleling of two (or more) converters, namely multi-phase operation, is a good solution for distribution of the current stress and it has been broadly investigated for both PWM [6]-[10] and resonant converters [11]-[13]. It has been found that multi-phase operation of LLC converters introduces implementation challenges that are typically related to the load current sharing between the converter's phases [11]-[24]. Current sharing is required to increase the power processing capability, maintain high efficiency and improve the reliability since the thermal stress is better distributed. Therefore, current sharing is considered mandatory in multi-phase LLC converters operation.

The main reason for an unbalanced load sharing between converter's phases lays in the difference between the components of the resonant networks. When interleaving phases, since the operation hinges on equivalent switching frequency of the different phases, mismatches in the resonant tank components impact the current distribution between the phases [13]. This is since only one phase operates at the frequency where the required voltage gain is achieved. Even small differences, within the resonant components values' tolerances, can have a severe effect on the current sharing and one phase will deliver most of the load current when other phases deliver a significantly smaller portion of it [19]. Several solutions have been proposed to achieve current sharing [12]-[24]. These solutions are used to match the resonant tanks components' values and can be classified as active or passive. In the active solutions, additional circuitry is added in order to control the resonant tank capacitance [13], [14] or inductance [15], to control the switching frequency [16] or to control the phase shift between the phases in case of three-phase structure [17]. However, these solutions suffer from complex control and implementation issues, high component count and high cost. The passive solutions use a common capacitor [18] or common inductor [19], [20] for

DSP VLSI DESIGNS ARE VERIFIED

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Abstract:
Foregg, Digital Signal Processing (DSP) is growing with sophisticated capabilities in locally accessible space applications, thanks to the use of Field Programmable Gate Arrays (FPGA) and Specific Integrated Circuits for Application (ASICs). Proof of these perplexing systems is being checked inside tiny timetables and characteristics. It is critical to conduct strict functional monitoring in order to ensure that these systems operate reliably in all conceivable run-time scenarios. Even with the use of cutting-edge Hardware Verification Languages (HVLs) and approaches such as System-Virology (SV) and Universal Verification Methodology (UVM), improving a mechanized self-checking validation state or test seats, including the age of bit-exact genius reference values, is a complex and time-consuming task. This article investigates a utilitarian check method for the DSP-based VLSI setup utilizing SV and Mat lab. The design of the verify situation, method for integrating Mat lab with SV-based validation condition, and age of bit-accurate genius references are continuously examined in detail, in addition to two contextual investigations.

Keywords: DSP, VLSI, UVM, predictor, coverage-powered verification, DPI

I. INTRODUCTION

DigitalVLSI designs are becoming more dynamic in order to meet ever-increasing practical requirements. Design teams are packing more and more logic gates onto a single chip in order to provide the necessary functionality and efficiency within the specified footprint. Practical testing of such systems using a traditional approach using guided test benches does not give sufficient confidence within the time constraints. In terms of enabling limited generation of random stimuli, self-checking and assertion-based verification, as well as defining the useable coverage matrix, test benches built in SV provide advantages. Random testing improves performance over manual testing, reduces the number of test vectors generated, and produces test cases that the verification engineer isn't aware of. Binding assertions to a specification at the simulation level identifies design flaws in real time and significantly reduces debugging times compared to non-assertion-based design. The simulated design's performance is compared to golden reference values generated using HVL and verified automatically during runtime. Functional simulation is considered complete when the goal of 100 percent functional coverage is met. In this SV-based test bench, assertions are used to verify the designs' control signals, and a predictor or checker is used to assess the designs' data processing capabilities. The verification engineer typically hand-codes these checks using a higher level of abstraction. With sophisticated features like DSP, checker development is difficult. With an onboard architecture that includes multiple DSP IP cores with capabilities like sine-cosine lookup table, fixed-to-floating-point translation, FFT, FIR filter, and so on, this becomes much more complex. DSP algorithms are available as standard features in MATLAB. The test bench can be simplified and overall verification efficiency can be significantly improved if these jobs can be utilized as golden reference models/checkers on the test bench. This article investigates the use of SV and the Mat lab pairing method with SV to create a verification environment.

II. Indicator of Authentication Setting

The testing of a VLSI specification is divided into two stages.

Creating Stimuli is the first step.

2. Research on the design's response

In the step of stimulus production, the architecture is set in a certain mode, and stimulus is introduced. In the research portion, the actual verification takes place. Figure 1 depicts a prototype test bench design that performs all of these tasks automatically. Sousing UVM's test bench (verification area) is made up of reusable verification environment components known as verification components. Each subsystem is encapsulated, ready-to-use, and customizable so that it may be used to test any device protocol, sub module configuration, or whole framework. The verification components, in conjunction with the unit under test (DUT), are used to verify the protocol or system model's execution.

International Journal of Gender, Science and Technology
..ISSN: 2040-0748

UGC Care Group I Journal
Vol-9 Issue-02 2019

Nanostructured materials' mechanical characteristics

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Abstract:

The mechanical characteristics of nanocrystalline (n-) materials are said to be affected by numerous microstructural factors, including as grain size and shape, distribution of pores, other flaws/defects, surface condition, impurity level, second phases/dopants, stress, duration of application, and temperature. There aren't any studies that go into great detail on the impact of each of these factors. The findings of both unequivocal and contradicting experiments are summarised below. The current theoretical levelThe mechanical behaviour of n-materials is discussed in some depth here. All rights reserved by Elsevier Science B.V.In terms of mechanical characteristics, microhardness, tensile and compressive behaviour, wear resistance, grain boundary sliding, and nanostructured materialsa steady stream of water

1. Introduction

Recent research has focused on 'nanostructured' (n-) materials with grain sizes less than 100 nm [1–3]. Even materials with a grain size have received favourable ratings in certain cases.There are 500 nm in this group. This should not be done.superplastic ceramics and highly deformed metallic materials are to blame.Materials with grain sizes ranging from 300 to 500 nm are often used.The high strain rate and/or low temperature superplasticity may be caused by Sub-micron grains are those with a grain size less than 100 nm.even though there are several uses for nanostructured materialsImportant, but not covered in this lecture.

2. Nanoscale structures in one or two dimensions and hybrid structures

Limiting the scope of the experiment yields positive outcomes. Nanoscale effects in a material that is otherwise normal. As This topic has previously been extensively discussed [3]. Some of the strategies will be briefly described. The advantages of adding a few to a few precipitates' materials with dimensions in the nanoscale range (The hardening of precipitation) is well-known. The moment n-Moan increase in hardness and fracture resistance was achieved by dispersing molybdenum in micrometre-sized Al2O3.strength and toughness were produced, however each characteristic peaked at a certain level. Composition in a different way the fracture strength of Al2O3 with n-SiC dispersions of grain size 200 nm was increased. The high temperature mechanical characteristics were also improved by a factor of three. it's at its most thick, it's hard to tell the hardness of n-composites based on Al2O3, MgO, and Si3N4 was the hardness change was consistent with the norm of increasing grain size and increasing SiCcontent mixtures. The hardness of n-composite Al2O3/SiC decreased much less with rising temperature than in Al2O3/SiC.Al2O3 is a single piece.

This gap grew as the amount of time passed. Sic content, however, the temperature at which brittleness changes to ductility also went up at the same time. In the case of Mg–, the tensile strength and elongation to fracture Alloys of Zn and La with amorphous or hcp Mg phases particulates in the phase (interparticle distance: 5–10 nm3–10 nm) were much higher than in amorphous the compositions of equivalent Mg–Zn–La alloys Homogeneous shear was inhibited by the n-particles Same here. Al-based alloys have also been promoted for this method. A significant increase in resistivity is seen when metallic filaments of diameter 20–90 nm are incorporated into bulk conductors. Introducing a new conception Cu–Nb3Sn composites, n-scale multifilament's of Nb3SnUnusual marriages of superconducting and mechanical technologies qualities may be obtained if desired. Composites created in situ using ultrafine number of permanent applications have been suggested for filaments. The use of magnets, especially when combined with other technologies mechanical strength and conductivity are essential. The mechanical and thermal characteristics of nanoscale mullite multilayers with a thickness of 1mm were found to be better. Comparison to their micrometre-sized counterparts. Partially smaller grains of stabilised tetragonal zirconia the performance of 70 nm silicon wafers covered with platinum was excellent. Sensors and non-volatile memory need ferroelectric characteristics. Applications that use memorySupermodulus and super compliance phenomena described in multi-layered thin film are at the centre of a debate.

composed of tiny, granular metal-containing layers sandwiched between two other materials. Additional testing is required before it can be

Journal of Management & Entrepreneurship
ISSN 2229-5348

UGC Care Group I Journal
Vol-8 Issue-02 2019

Multiobjective Transportation Problem Using Fuzzy Decision Variable ThroughMulti-Choice Programming

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ABSTRACT

Using fuzzy decision variables, this work examines the examination of the Multi-Objective Transportation Problem (MOTP). When solving a Transportation Problem, the decision variable is usually considered as a real variable. There are a lot of multi-choice fuzzy numbers in this work, but the decision variable in each node is chosen from a collection of those values. Multiobjective Fuzzy Transportation Problems are created when numerous goals are included in a transportation issue with a fuzzy decision variable (MOFTP). We provide a novel mathematical model of MOFTP that incorporates fuzzy goals for each of the objective functions. After that, the multi-choice goal programming methodology is used to define the model's solution method. For further proof of this article's value, a numerical example is provided.

KEYWORDS

Fuzzy Variable, Goal Programming, Multiobjective Decision-making, Multiple-Choice Programming, Transportation Problem

INTRODUCTION

When it comes to real-world decision-making, the issue of transportation is critical. For example, a linear programming model may be utilised to solve the transportation problem in order to find an optimum solution to the decision-making issue. To solve the classical transportation problem, one must determine how many units of a commodity are to be shipped from each source to various destinations, satisfying source availability and destination demand, while minimising the total cost of transportation and cutting down the costs per unit of items for the purchaser.

Hitchcock (1941) first conceived of the issue of mass transit, and Koopmans (1944) refined it on his own (1949). Due to the current competitive market, a transportation problem with a single objective function is insufficient to address a variety of real-life decision-making issues. Such real-world conditions need the introduction of the multi-objective transportation issue. There have been several studies in this area by scholars such as Verma et al.

For a long time, multiobjective optimization problems were thought to be amenable to fuzzy set theory (Zimmerman 1978). Additionally, in order to transform a transportation issue into a fuzzy one, the factors of transportation (cost, supply, and demand) are presented using the concept of "fuzzy numbers." Fuzzy transportation issues may be solved using an approach proposed by Kumar and Kaur (2011) based on traditional transportation methodologies. In a decision-making issue, Ebrahimnejad et al. (2011) developed an algorithm for limited linear programming with fuzzy cost coefficients. Data envelopment analysis using fuzzy parameters was presented by Marbini et al. (2011). Singh et al. have provided a research study on multi-criteria futuristic fuzzy decision hierarchy and its application in the tourist business (2015). Decision-making approaches to fuzzy linear programming (FLP) issues with post-optimal analysis were included in Pattnaik's paper in 2015. When it comes to completing real-world assignments in an intuitionistic fuzzy environment, Kumar and Hussain (2016) offered a straightforward technique. To our knowledge, no one has before proposed the notion of a fuzzy variable in a transportation issue. Fuzzy objectives are assumed in this case because we presume the expectations in the destinations of the transportation issue are fuzzy numbers. There are a lot of options and a lot of vague expectations at the final destinations. Therefore, the decision maker must make a choice about the supply of products that maximises profit while maintaining the highest feasible level of need fulfilment at each destination. The optimum solution to the issue does not need an allocation at each node in a transportation problem. The crisp goal "0" with a high priority value is used when no allocation is needed in a cell. The need in the assigned cells of our suggested transportation issue is "0" and one of a variety of multi-choice fuzzy integers. On the basis of this premise, we devise a transportation issue with ambiguous choice factors. The multi-choice goal programming technique is used to handle this decision-making challenge. Based on real-world decision-making challenges, this study is structured in a multiobjective framework. There are some ambiguous aims in each objective. One of Charnes et almost .'s important and well-known decision-making techniques is Goal Programming (GP) (1955). In the face of real-world decision-making challenges involving multiobjective structures, goal programming's intriguing theory and broad

Journal of Management & Entrepreneurship
ISSN 2229-5348

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Vol-8 Issue-01 2019

Fuzzy Linear Programming Solved via Solving Linear Programming

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ABSTRACT

Engineering design is typically plagued with inaccuracies due to the complexity of many real-world engineering systems. Fuzzy linear programming issues play an important part in fuzzy modelling, which is able to express uncertainty in the real world. Dubois and Prade's LR fuzzy number is one of the most practical themes in recent research, with several useful and simple approximation arithmetic operators on it. Fuzzy vectors occur as a vector of triangular fuzzy integers in various vector calculations. To begin, we are looking for a nonnegative fuzzy vector x in this situation fuzzy numbers. Here, our main scope is finding some nonnegative fuzzy vector ~x in which maximizes the objective function ~ ~ z = c x so that ~ ~ A x = b , where A and ~b are a real matrix and a fuzzy vector respectively, and n c 1× is a real vector too.

Keywords: Fuzzy arithmetic, Fuzzy linear programming, Fuzzy number

1 Introduction

A wide range of fields have benefited from fuzzy set theory, including control theory, management science, mathematical modelling, and industrial applications. Tanaka et al. [6] initially suggested the idea of fuzzy linear programming (FLP) on a general-level. This was followed by a large number of writers considering different FLP difficulties and coming up with a variety of solutions. Fuzzy numbers may be compared using ranking functions [1,4,5]. In particular, these approaches are the most convenient. Many writers employ this approach by defining an analogous FLP issue and then using the optimum solution of that solution as the FLP solution. To solve the linear programming issue with fuzzy variables and its dual, fuzzy number linear programming problem directly, we used a generic linear ranking function in [4]. A linear programming issue using triangular fuzzy integers is the focus of this research. New methods for addressing FLP issues without ranking functions have been developed by our team. In addition, we provide an example to demonstrate our strategy.

2 Preliminary

In this section we review some necessary backgrounds of the fuzzy theory inwhich will be used in this paper. Below, we give definitions and notations takenfrom[2].

Fuzzy numbers

Definition2.1. A fuzzy number $\tilde{A}$ is a convex normalized fuzzy set on the real line R such that:

1) There exists at least one $x_0 \in R$ with $\mu_{\tilde{A}}(x_0)=1$.

2) $\mu_{\tilde{A}}(x)$ is piecewise continuous.

Let us assume that the membership function of any fuzzy number $\tilde{A}$ is as follows:

$$\mu_{\tilde{A}}(x)=\begin{cases} 1-\dfrac{m^A-x}{\alpha^A}, & m^A-\alpha^A \le x < m^A \\ 1-\dfrac{x-m^A}{\beta^A}, & m^A \le x \le m^A+\beta^A \\ 0, & otherwise \end{cases}$$

where m^A is the mean value of $\tilde{A}$ and α^A and β^A are left and right spreads, respectively and it is termed as **triangular fuzzy number**. We show any triangular fuzzy number by $\tilde{A}=(m^A,\alpha^A,\beta^A)$. Let $F(R)$ be the set of all triangular fuzzy numbers.

Definition2.2. A fuzzy number $\tilde{A}=\{(x,\mu_{\tilde{A}}(x)) \mid x \in R\}$ is nonnegative if and

Journal of Management & Entrepreneurship
ISSN 2229-5348

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Vol-8 Issue-01 2019

Experimental Study of Earth Batteries

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Abstract

Earth batteries have been successfully built and operated as an alternative source of low-power electric supply. Different electrode configurations were tested for the greatest possible variation in potential. The most appropriate combinations of frequently accessible metals were chosen for more thorough characteristic investigations in light of robust and cost-effective application of this natural power technology by untrained village customers. Each cell produced a voltage of 2.05, 1.40, 1.10, and 0.9 volts when the anode and cathode were made of Magnesium, Zinc, Aluminum, and Carbon, respectively. One Zn-Cu cell was found to have an average rated power of a few tens of microampere. When it came to low-power electronic products like mobile phones and white-light LED calculators and wristwatches, the site had them all. Using many earth battery cells in series like a commercial lead acid battery resulted in a linear rise in the voltage. The load current was found to rise by connecting earth cells in parallel. Furthermore, increasing the electrode surface area was shown to boost source current capacity. However, single cell voltage was shown to stay consistent independent of the electrode diameters. According to this research, the most cost-effective metal electrodes for earth batteries have been studied. Operation of earth batteries as a free power source was proved effectively.

INTRODUCTION

Reported free energy holy grails may include electrostatic motors, geo-magnetic generators [1-2], air [3], sea [4] and earth batteries [5-8]. Some free energy proponents have frequently been concentrating on the perpetual motion machines employing scientifically unfeasible theories such as over unity devices, millennium motors, resonance based self-charging and free wheeling devices. There exists nothing as free energy source such as mutual powering motor-generator set without any net input or gravity based free running machines or negative resistance based amplification. However, earth soil chemical processes and electron affinity based earth batteries may be researched for low to high voltage DC potential to drive small scale white emission LED lighting loads in remote mountainous places or small scale electronic equipment. They may also be considered to replace high voltage low current charging power sources or ionisation power supplies. Like earth batteries the marine batteries likewise may be explored for comparable uses. However, air batteries may be employed for bulk power generation and grid system operation [3]. In light of global energy crisis to be triggered by natural end of oil and gas during next 50 to 60 years time [9-11], it has become extremely vital to seek for alternative energy sources to hold back the human race from involvement to a major energy war [12-13] Although, uranium [14] and coal [9] would continue to exist for few millennia but they can not replace oil and gas despite dangers of radiation hazards (plutonium) and greenhouse gases (CO2) (CO2). Either, we can halt global warming at danger of nuclear radiation or make the earth nuclear free at risk of global warming owing to increasing temperatures from1.4 to 5.8°C from 1990 to 2100 by exponentially rising CO2 concentrations. Rise in earth surface temperature in last 10 hot years (1997-2007) was roughly 0.6°C. Maximum temperature has been reported to be 52°C in major cities of Pakistan and 46°C in Greece. Cool the house and heat the world or adapt to natural ways of existence. We must halt usage of excessive energy for amusement and retune ourselves to new lifestyles demanding least amount of energy in the form of cooling or heating. The scientists must work hard to investigate new sources of energy otherwise be prepared to be died soon in a major energy war or global greenhouse impact none knows which triumphs sooner. This study is a very honest attempt to examine the possibilities of utilising earth batteries for distant village lights, communication signalling and running small scale electronic loads when there is no other source of power or easy to preserve electricity. Assuming uniform electrode profile the potentials of various typical metals electrode pairs in soils are presented in Table 1. [15-17].

Journal of Management & Entrepreneurship
ISSN 2229-5348

UGC Care Group I Journal
Vol-8 Issue-01 2019

A Machine Learning Model for Heavy Vehicle Average Fuel Consumption

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Abstract—Data summary for personalised machine learning models for fuel usage should take into account distance rather than time, according to this article. This strategy is combined with seven predictors obtained from vehicle speed and road grade to develop a highly predictive neural network model for the average fuel consumption in large trucks. This method. A fleet's whole fuel consumption may be reduced by using the suggested model, which can be devised and implemented for each vehicle individually with ease. Distance travelled is pooled into predictors for the model. Fuel consumption may be predicted with a 0.91 coefficient of determination and a mean absolute peak-to-peak percent error of less than 4% for routes that contain both city and highway duty cycle segments using a 1 km window, according to the findings of the study. Index Neural networks; vehicle modelling; fleet management; average fuel usage; data summarization.

INTRODUCTION

Manufacturers, regulators, and customers all have an interest in fuel consumption models for automobiles. Every stage of a vehicle's lifecycle necessitates its use. During the operation and maintenance phase of heavy trucks, we simulate the average fuel consumption of these vehicles. Fuel consumption models may be divided into three primary groups, namely: Understanding the physical system is the basis for the development of physics-based models. These models use mathematical equations to explain the dynamics of the vehicle's components at each time step [1], [2]. Models that are data-driven and reflect an abstract mapping from a group of predictors to the objective outcome, in this instance average fuel consumption [3], [4], are called machine learning models. It is possible to create statistical models that are based on data and that establish a relationship between an indicator's probability distribution and the desired result. Both [5] and [6] may be found. When it comes to cost and precision, you'll have to choose one over the other depending on your specific needs. We provide a concept for large fleets of heavy vehicles that can be readily customised for each vehicle's particular needs in this article. An efficient fleet manager may use realistic models for each vehicle to improve route planning for all of the vehicles in a fleet, which ensures that all route assignments are aligned to reduce total fleet fuel consumption. Road transportation of commodities [7], public transit [3], construction trucks [8], and waste trucks [9] are all examples of these fleets. Methodology has to be applicable and adaptable for any fleet, regardless of the wide variety of vehicle technology (current and future) and configurations. Because of these criteria, machine learning is the preferred method when weighing the precision sought against the expense of developing and adapting a customised model for each vehicle in the fleet individually. There have been a number of earlier models for both immediate and average fuel usage. Instantaneous fuel consumption is best predicted using physics-based models [1], [2], which can capture the dynamics of the system's behaviour at various time steps. Because of the difficulties in recognising patterns in real-time data, machine learning algorithms are unable to accurately estimate immediate fuel use [3]. These models, on the other hand, can accurately detect and learn patterns in average fuel usage [4]. Machine learning models for average fuel consumption have previously used a series of predictors gathered over a period of time to forecast the associated fuel consumption in terms of either gallons per mile or litres per kilometre, depending on the vehicle type. The input space of the predictors is quantized with regard to a given distance rather than a constant time period, but our strategy is still focused on average fuel use. An aggregate of all predictors based on a fixed window that reflects vehicle travel distance provides a superior mapping of input space to output space in the proposed model.... However, prior machine learning models had to execute a time-to-distance translation from the input domain to its output domain in order to discover patterns in that data (i.e., average fuel consumption). Several advantages come from keeping the model's input and output areas at the same scale: We gather data as fast as it has an effect on the result. A vehicle that is stopped may gather the same amount of data as a vehicle that is moving when the input space is sampled with regard to time. Vehicle fuel consumption may be predicted

Journal of Management & Entrepreneurship UGC Care Group I Journal
ISSN 2229-5348 Vol-8 Issue-02 2019

ANALYSIS OF CHALLENGES IN MOBILE CLOUD COMPUTING

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Abstract: - A cell phone is the main computing system nowadays. In general, people are demanding moreresources than a mobile device can afford. A mobile device should get support from an external source to mitigate this. Cloud computing systems are among those outlets. In this article, Cloud Computing addresses the introduction of mobile cloud computing and its possible development. It reviews the concept of Mobile Cloud Computing vs Cloud Computing, functionality, design, advantages, drawbacks, implementations, mobile cloud computing challenges as well as solutions, future scope and analysis.

INTRODUCTION

Mobile Cloud Computing

Mobile cloud computing incorporates modern technology to create a new system that carry out heavy computational tasks, and stores huge quantities of data with mobile devices and cloud computing. In this modern architecture, data processing and data storage are carried out outside mobile devices. Cloud computing technologies are used for mobile applications development, control and hosting. A mobile cloud approach allows developers to create applications that are specifically designed for mobile users without being bound by the mobile operating system, processing system or storage area of the Smartphone. Mobile cloud computing is generally a modern technology, with mobile cloud computing centres accessible via a mobile device from a remote web server, generally without the need to install a client program on a receiver computer. With mobile cloud computing, the necessary resources can be accessed through cloud for the operation of these applications in terms of computing, storage and platform support, and a larger number of devices can be supported. MCC offers business opportunities both for mobile network operators and cloud providers. MCC can be further defined by a rich mobile computing technology which utilizes unified elastic resources of different clouds and network technologies to provide unlimited functions, storage and immovability to support a large number of mobile devices anywhere on the Ethernet or on the Internet, regardless of heterogeneous pay-as-you-go environments and platforms.

Cloud Computing V/S Mobile Computing

Cloud computing and mobile computing all have to do with transmitting data using wireless networks. Cloud computing refers to the specific design of new technologies and services that enable data to be transmitted to a remote, secure location, typically managed by a supplier, over distributed networks via wireless connections. Usually, cloud service providers support many customers. They arrange access between the local or closed networks of the client and their own systems for data storage and data backup. This ensures that the supplier can gather data that is sent to them and store it safely, while providing services through these carefully managed ties back to a customer.

The introduction of modern devices and interfaces applies to mobile computing. Mobile devices that can do a lot of what conventional desktop and laptop computers do are smart phones and tablets. Mobile computing functions include accessing the Internet through browsers, supporting multiple core operating system software applications, and sending and receiving various types of data. As an interface, the mobile operating system assists users by offering intuitive icons, popular search technologies, and basic commands on the touch screen.

Cloud computing is something that is used by many organizations and businesses, but mobile computing is mainly a consumer-facing service. Cloud computing can also support people, although some of the most advanced and advanced cloud computing systems are targeted at companies. The advent of smart phone and tablet operating systems and, on the cloud end, new networking services that can support these and other devices is an evolving image of the gap between cloud computing and mobile computing.

ARCHITECTURE

The following categories of cloud services are included in the MCC:

- Distant Cloud for Smartphone
- Distant Cloud Immobile
- Proximate entities in mobile computing
- Proximate entities in immobile computing
- Hybrid

Analyzing DSM Strategies' Effects on Reliability

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Abstract— This paper aimed at resolving the power crisis of the Indian state, Tamil Nadu's power system through Demand Side Management (DSM) strategies. DSM is considered as a great tool in energy management because it enables utility consumers to satisfy the power needs with little or no increase in power generation. Energy Planning is carried out on integrated approaches involving energy supply provision and energy efficiency of demand reduction through Integrated Resource Planning. This planning envisages power demand in proportion to the generation against energy consumption patterns. A summative analysis of DSM through Load Management Program (LMP) and Energy Reduction Program (ERP) is worked out. These strategies were investigated for the increasing load demand of the future enhanced 15 years. For this investigation Wien Automatic System Planning -IV (WASP-IV) is used. For the adaptation of each strategy Load demand variations, reliability of the system through its index Energy Not Served (ENS) were investigated. The results were compared with and with no DSM strategies adaptation. Then the best suited DSM strategy is chosen for the considered power system. Chosen DSM strategy which is proposed in this paper will benefit the consumers and the State when properly implemented.

Keywords— Power system reliability, Energy Not Served, Load Management Program, Energy Reduction Program

I. INTRODUCTION

The drastic increase in population and technological developments has necessitated the corresponding increase in the consumption of power. This has made a deep impact on the proportion of demand in the power versus power generation. A gulf, thus, has evolved been bridged in this regard. While this has been the case in almost majority of developing countries, the State of Tamil Nadu in India faces acute shortage of power. With the population of more than 6.5 crore, the State has been undergoing the power demand for the last decade. The condition has become worst during the summer season when there will be a heavy consumption against unstable generation of power. Many factors either contribute or affect the proper management of power or power generation. Some of the serious factors are political uncertainty, huge risk in evolving policies, need of heavy investments and complex seasonal impacts. Thus, a time has come for the Tamil Nadu electricity authorities to explore the strategies to meet the crisis. The government is in a position to arrive at the methods to review the conventional practice of supplying power. Similarly, the government shall evoke measures to advise the public on making use of power in a judicious manner so as to bring in mutual benefit. In this regard, this paper aims at focusing an effective tool in managing power demand called Demand Side Management (DSM). However, this system requires various counts of improvement in all sides based on the reliability [1].

The function of DSM can be classified under two programs namely (a) Load Management Program (LMP) and (b) Energy Reduction Program (ERP). Of these two, ERP involves in reducing the demand through the processes that are more efficient in terms of construction or building the infrastructures. The other, LMP involves in altering the load pattern thereby focusing on less demand during the peak hours. Yet, the promotion of DSM is based on the varied patterns of different consumers involved. Generally, power generation companies look in for the reduction or shift in the consumer's energy demand. Then they execute by way of delaying or withholding further erection of generation sources leading to maximum utilization of the existing power resources.

II. RELATED WORKS

For the sake of effective analysis on DSM in terms of the reliability aspect of Tamil Nadu power system for the year 2017 [2] has been taken for consideration. Similarly, to meet over increasing load demand, different penetration level of Renewable Energy Sources (RES) with regard to the Generation Expansion Planning for Tamil Nadu has been proposed in [3]. The cost effective means in Climate Aware Generation Planning is discussed in [4]. An overview of electricity crisis in Nigeria, the policy issues and environmental ramifications of the power sector reform Act as well as dispersion modeling of emissions from Nigeria's pioneer NPP is presented in [5].

III. OUTLINE VIEW OF TAMIL NADU POWER SECTOR

In Tamil Nadu, the power supply is managed by Tamil Nadu Generation and Distribution Corporation (TANGEDCO) and it plans for the effective implantation of power generation methods. The corporation has the net installed capacity of 23,762 MW as of December 2017 [6] is shown in Table I. This includes the shares distributed by the State, Central government and Independent Power Producers (IPPs).

The cumulative contribution of various sources for this net installed capacity of 23,762 MW comes from the generation mix of i) Coal plants: 27.4%,ii) Gas plants: 4.3%,iii) Nuclear plants : 4.2% iv) Diesel plants : 1.73% v) Lignite plant: 17.4%. These sources account for 55.03% of the total installed capacity with the remaining 44.97% coming from the renewable sources. Out of this 44.97% installed capacity, wind energy accounts for 31% followed by Hydro plants with 9% and 5% put together by bio-mass and solar energy. The condition of power demand in the State of Tamil Nadu during the last five years has been very critical. Being

Journal of Management & Entrepreneurship
ISSN 2229-5348

UGC Care Group I Journal
Vol-8 Issue-02 2019

Combinatorial Optimization Using (Integer) Linear Programming Techniques and Metaheuristics

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Abstract:

There are a number of different strategies available for dealing with difficult optimization problems. Two particularly successful methodologies for dealing with combinatorial challenges are mathematical programming techniques, which include (integer) linear programming-based methods and metaheuristic approaches. These two organisations were created by different communities that were more or less isolated from one another. Building hybrids of mathematical programming techniques and metaheuristics has just recently gained widespread attention from academics, who have recognised the many advantages and enormous possibilities of doing so. When it comes down to it, many issues may be dealt with significantly more successfully by using synergy between these different methodologies than by using "pure" classical algorithms. How mathematical programming methods and metaheuristics should be coupled to get these benefits is the central question. In the last several years, a slew of new procedures have been introduced. In this chapter, after providing a brief introduction to the basics of integer linear programming, we review well-known solutions for such combinations and divide them into ten different methodological groups.

1 Introduction

Combinatorial optimization problems (COPs) are frequent in a broad variety of highly important and practical disciplines, and their solution is notoriously difficult due to their computational complexity. Timetable creation, setting optimal schedules for operations that will be handled on a production line, developing efficient communication networks, and containerization are all examples of jobs that fall into this category.loading, determining the most cost-effective truck routes, and a multitude of other difficulties that emerge in the transportation industryComputational biology and artificial intelligence are only a few such examples. This includes setting values for discrete variables in such a manner that an optimal solution in terms of the constraints is produced.It is established whether or not a certain goal function exists under the limits of a specific job. Constraints.

The bulk of COPs are quite difficult to settle. For example, the fact that many such problems are NP-hard [38], which is captured in theoretical computer science, is an excellent illustration of this. NP-hard COPs are frequently referred to as "hard COPs" because of their inherent complexity as well as their enormous practical relevance.In the literature, there has been a plethora of solutions for addressing difficulties that are comparable to those that have been discussed.the last couple decades The techniques available for resolving COPs may be divided into the following categories:Algorithms are separated into two types: precise algorithms and heuristic algorithms. Precision algorithms are the most exact algorithms. Precise algorithms are guaranteed to discover the optimal solution while also demonstrating that it is in fact the best response.for each and every instance in which a COP occurs Running time increases dramatically as a problem instance grows in size; yet, only small or moderately-sized issues are often impacted by this phenomenon.Cases may be treated in a realistic manner in order to attain proven maximum efficiency. In the event of more serious circumstancesMost of the time, the only choice available is to use heuristic algorithms, which trade off optimality for speed, meaning that they are intended to provide outstanding results but not necessarily the best results.providing the best possible replies in a reasonable length of timeWhen it comes to exact approaches, the methods listed below have been shown to be successful.These approaches, including branch-and-bound algorithms, dynamic programming, constraint programming, and, in particular, the vast class of integer (linear) algorithms, have achieved significant success.The use of approaches such as linear programming and other relaxation-based methods is common in this field (ILP).Techniques such as branch-and-cut, cutting plane and column generating processes, and others are available.

Chabot System for Artificial Intelligence in Healthcare

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Abstract:

Through chat bots one can communicate with text or voice interface and get reply through artificial intelligence. Typically, a chat bot will communicate with a real person. Chat bots are used in applications such as ecommerce customer service, call centers and Internet gaming. Chatbots are programs built to automatically engage with received messages. Chatbots can be programmed to respond the same way each time, to respond differently to messages containing certain keywords and even to use machine learning to adapt their responses to fit the situation. A developing number of hospitals, nursing homes, and even private centers, presently utilize online Chatbots for human services on their sites. These bots connect with potential patients visiting the site, helping them discover specialists, booking their appointments, and getting them access to the correct treatment. In any case, the utilization of artificial intelligence in an industry where individuals' lives could be in question, still starts misgivings in individuals. It brings up issues about whether the task mentioned above ought to be assigned to human staff. This healthcare chatbot system will help hospitals to provide healthcare support online 24 x 7, it answers deep as well as general questions. It also helps to generate leads and automatically delivers the information of leads to sales. By asking the questions in series it helps patients by guiding what exactly he/she is looking for.

Keywords: Artificial Intelligence, Prediction, Pattern matching, Disease, Query processing

Introduction:

Artificial Intelligence, also referred to as Machine Intelligence, is an intricate innovation smoothly gearing up to revolutionize our lives forever. The stimulation of human intelligence using contemporary computers that imitates cognitive functions is changing the ways of problem-solving. And with cutting-edge disciplines such as AI and Chat bots, researchers are leading the way to a great transformation. Apart from all other ways of demonstrating an impact, the role of AI in health. To lead a good life healthcare is very much important. But it is very difficult to obtain the consultation with the doctor in case of any health issues. The proposed idea is to create a medical chatbot using Artificial Intelligence that can diagnose the disease and provide basic details about the disease before consulting a doctor .To reduce the healthcare costs and improve accessibility to medical knowledge the medical chatbot is built. Certain chat bots acts as a medical reference books, which helps the patient know more about their disease and helps to improve their health. The user can achieve the real benefit of a chatbot only when it can diagnose all kind of disease and provide necessary information. A text-to-text diagnosis bot engages patients in conversation about their medical issues and provides a personalized diagnosis based on their symptoms. Hence, people will have an idea about their health and have the right protection. are industry is particularly ground-breaking.

CHATBOTS:

Are automated systems which replicate user's behavior on one side of the chatting communication. They are mimic systems which imitate the conversations between two individuals. They provide a simulating platform for effective and smart communications with the user on the other end. They copy marketers, sales person, counsellors and other mediators and work to provide services that the above-mentioned people provide. There are wide ranges of chat bots catering in many domains some of them are as follows: business, market, stock, customer care, healthcare, counseling, recommendation systems, support system, entertainment, brokering, journalism, online food and accessory shopping, travel chat bots, banking chat bots, recipe guides, etc.The most famous chat bots like Alexa or Google assistant are the best examples that can be given for smart communicating chat bots. These are general

A Recommendation System for Textile Products Based on Deep Learning

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Abstract

These days, it's more common to use recommendation algorithms to keep customers happy and boost revenue. It is hoped that consumers would be able to make more informed decisions thanks to these solutions. A recommendation system has become an essential aspect of internet buying. Recent emphasis has been focused on fashion and clothes as the subject of several recommendation algorithms. A Convolutional Neural Network (CNN)-based recommendation system has been proposed in this study (CNN). According to the preferences of the CNN's users and designers, distinct patterns have been assigned to different classes in the architecture. Color compatibility is taken into account by the deep learning model when recommending designs for textile items. Our own pattern dataset, which contains 12000 photos, was used to train and evaluate the suggested model. Using pattern datasets, we were able to demonstrate the efficacy of our technique.

Keywords— Convolutional neural networks, colour compatibility, and deep learning are all examples of recommendation systems.

INTRODUCTION

The growth of online shopping has been fueled by recent advancements in internet technology. It's more common for customers to buy new items in the same colour or design as their current ones. To find all of the appropriate items while buying online, it might take a long time. To uncover patterns that clients care about more quickly, automated recommendation systems are useful. Consumers are increasingly turning to recommendation systems to assist them sort through a large number of items on the internet and find the ones that best suit their requirements [1]. Research into recommendation systems has drawn the interest of scholars, and a number of distinct recommendation systems have been published [2–7] in the literature on various topics, such as movies, music, videos, fashion, and apparel, among others. Collaborative filtering [8], content-based approaches [9], or systems where these two methods are combined are the most often used recommendation systems. Collaborative filtering models interactions between people and goods using a matrix factorization method that incorporates cooperation between user behaviour and product evaluations. This kind of recommendation is based on the product description and user's preferences. Rather of relying on numerical and textual information, traditional recommendation system approaches such as collaborative filtering and content-based methods use deep learning to extract characteristics from photos and videos, such as clothes and fashion. In recent years, deep learning-based algorithms have been successful in pattern recognition, image processing, clustering, and classification. Deep learning-based research have been shown to be effective in recommendation systems, as well. An integrated multi-view recommendation system, called Deep-MINE, was suggested by Guan and colleagues [5] and a unified deep neural network model was constructed. Auto-encoder networks were used to Amazon.com's women's clothes to illustrate the model's efficacy. An strategy to extracting visual attributes such as shoes, dresses, pants and bags was used by Liu et al. [6]. The model uses style characteristics and visual category information to identify features in photos. Zhang et al. [7] used a hybrid CNN technique to select clothes based on the link between apparel and location. The support vector machine was used in conjunction with a multilabel CNN in this investigation. When it comes to making recommendations, it's important to take into account both visual and aural characteristics. They said that a neural network had been pre-trained to extract the aesthetic elements. In [12], a long-short-term memory (LSTM) network-based outfit suggestion system is suggested. Using existing photographs and descriptions of outfits, they set out to figure out how to create one that would be universally acceptable. A comparative deep learning model described by Lei et al. [13] learns picture and user preferences simultaneously. Three subnetworks make up the network. Using a sub-network, we were able to predict the preferences of our consumers. Fashion and apparel are the only areas where present recommendation algorithms have an emphasis. This research proposes an online recommendation system for textile items based on colour compatibility. Using the system's recommendations, customers may buy

Diallyl disulfide, an organic sulphur compound found in garlic, has several biological applications.

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ABSTRACT

It's generally agreed that garlic is a healthful addition to the diet and a great way to get your fill of medicinal compounds. Anti-inflammatory, antioxidant, antibacterial, cardiovascular protective, neuroprotective, and anticancer actions are only some of the many positive biological effects of diallyl disulfide (DADS), a key bioactive component of garlic. Does this evaluation follow a systematic approach? the biological roles of DADS and elucidated the molecular processes by which it plays these roles. For these reasons, we're keeping our fingers crossed that this review facilitates future study and the creation of DADS for by shedding light on the present literature and pointing the way toward its future evolution. illness diagnosis and treatment in a nutshell.

Introduction

Medicinally useful substances may be found in plants in great abundance. The use of garlic as a functional food and traditional herb for the treatment and prevention of a variety of diseases has gained widespread acceptance. illness therapy, including cancer and infectious conditions [1-4] Organic sulphur is thought to most biological processes may be attributed to chemicals made with garlic [5]. Two disulfide bonds in an allyl group (composed of two allyl groups attached to sulphur atoms, see Figure 1) is a crucial sulfur-containing component found in garlic [6, 7]. There has been some research that DADS serves a variety of biological purposes, including anti inflammatory ones, cancer-preventative, detoxifying, and antioxidant effects, the nature of which may be deduced from its chemical make-up [4, 7-9]. Extensive prior analyses have focused on the encouraging The importance of DADS in the management of a variety of wide spectrum of illnesses [6]. Our job here is a methodical Biological Roles of DADS: A Review with an emphasis on the cellular and molecular processes, with the make available the most recent scientific data and expert analysis experiments.

Methodologies

We looked for DADS-related articles in PubMed, Web of Science, and GreenMed up to June 2021. The International Clinical Trials Database was also searched. Register System and Clinical Trials.gov as Possible Resources for medically relevant trials Bibliographic citations and references A supplementary product was the result of a manual search of reviews.

Biological Functions of DADS

Anti-inflammatory Effects, Section 3.1. Injury, toxicity, or microbial infection may trigger inflammation as an adaptive response by the host. The right kind of inflammatory tissue growth and protection by removing potentially damaging stimuli. recovery [10]. Nonetheless, unchecked inflammation causes repeated insult to the body's organs and tissues, which may lead to deterioration of these structures due to disease [11]. Academics have observed that DADS may reduce inflammation in a variety of illnesses include arthritis and pancreatitis [12, 14]. As shown by Fasolino et al. [15], mucosal edoema

Applications of Liquid Chromatography-Mass Spectrometry

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Abstract

It is a sophisticated analytical technology with very high sensitivity and specificity, the Liquid Chromatography-Mass Spectrometry. Combining Liquid Chromatography (LC) with spectroscopy is known as LC-MS (MS). It is possible to separate components using the Liquid Chromatography (LC) technique, which is followed by the transfer of the samples to Mass Spectrometry (MS) where the detection, identification and determination of masses may be done in the presence of other elements. Quantitative and qualitative analysis of pharmaceutical drug ingredients, intermediates, and related chemicals is accomplished using LC-MS. in-vitro dissolution, bio-equivalence, bioavailability, and metabolite investigations are the most common uses of LC-MS. It is also utilised in fundamental research, agriculture, forensics and the food and beverage sectors. LC-MS Instrumentation and uses of the LC-MS method are briefly reviewed in this article.

Keywords

High-Performance Liquid Chromatography (HPLC); Liquid Chromatography Mass Spectrometry (LC-MS)

1. Introduction

Liquid Chromatography-Mass Spectrometry (LC-MS)

HPLC is one of the most often utilised analytical techniques in the pharmaceutical business for determining and quantifying pharmacological compounds and their associated chemicals. HPLC is widely utilised in the pharmaceutical, chemical, and pesticide sectors because of its great repeatability and precision. As the name suggests, the LC-MS method is a combination of Liquid Chromatography and Mass Spectrometry (LC-MS) (MS). HPLC (LC) uses a chromatographic column to separate mixture components. For the most part, the divided components can't be recognised only by LC. Identification of new and recognised chemicals as well as structural elucidation are all possible using mass spectrometry. An individual component's unique mass spectrum is not enough to identify a complex mixture; instead, each component's mass spectrum overlaps with each other. Connecting LC with a mass spectrometer is a tough task (MS). The liquid eluents are transferred from LC to MS through an interface. An increasing number of research [1] employ LC-MS in order to better understand drug solubility, bioavailability, bioequivalence and pharmacodynamics. In fundamental research, pharmaceutical, agrochemical, culinary, and other sectors, preparative LC-MS systems may be utilised for mass-directed purification of particular compounds from such mixtures [2,3].

2. Instrumentation

Liquidchromatography-mass spectrometry (LC-MS)

It's a combination of HPLC and Mass Spectrometry known as LC-MS, and it's utilised to get the separation power of HPLC and the detection power of Mass Spectrometry (MS). Figure 1 depicts the LC-MS schematic block diagram. The pieces of an LC-MS apparatus are shown in the following table.

Liquid Chromatography, to start with (LC)

Analysis of liquids using HPLC and mass spectrometry

The Liquid Chromatography (HPLC) Liquid mobile and solid stationary phases are used to separate components of mixtures in high-performance liquid chromatography Reversed Phase Chromatography (RPC), Ion

FLUID-STRUCTURE INTERACTION IN WATER TANKS: DYNAMIC ASSESSMENT

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ABSTRACT

Due to increased population and growth of cities, the number of raised water tanks servicing the demand urban \swater system is on the rise. As it has been indicated in the Iranian code of practise for Earthquake /2800 due \sof the necessity of sanitation and hygiene water tanks have been recognised as vital constructions during theunforeseen occurrences such as earthquake. There is a high anticipation not to observe any phase out for their serviceabilityfollowing the earthquake. Because of the presence of fluid with various behavioural features of structures containing itBecause the most part of mass of tanks are positioned in a great distance from their foundation, the behaviour of thesesorts of structures in comparing with conventional structures are more sophisticated. In this study, cylindricalconcrete water tanks, which feature a central shaft, have been examined with consideration the influence of the structure'scontact with water via accurate execution of boundary constraints on the interface between fluid andstructure. Also considering the volume of water in the tank and their response under recorded acceleration of variedearthquakes utilising finite element approach. The findings were then compared with proposed ways by Iranian code/2800, which shows a significant variation between the approaches given.

1. INTRODUCTION

The behaviour of liquid storage tanks during earthquakes is more significant than the economic worth of the tanks and their contents, which are crucial buildings in the water, oil and gas industries. Firefighting water, for example, must be available in the event of an earthquake, and utility infrastructure must be operable to satisfy these needsor satisfy the needs of the public as a source of drinking water. In light of these factors, serviceability is now the primary design consideration is taken into account in the majority of these constructions. It is crucial to have a clear grasp of how seismically vulnerable these buildings are.Safety goals and construction and maintenance expenses must be balanced.The interaction between fluids and these structures is a key issue in the understanding and design of these systems. Andorganisation. It is very difficult to predict the analytical response of coupled field systems. Most of the time, Numerical approaches, such as the finite element method, are at the heart of many research. Concrete water tanks with central shafts are analysed numerically in this work by employing finite elements. Software component that takes into account fluid-structure interaction.

2.THEORY

There is a wide range of methods for analysing the fluid-structure interaction. a) Added mass technique, b) The Eulerian-Lagrangian method, and c) The Lagrangian-Lagrangian method are all examples of these approaches.The fluid mass is introduced to the structure at the contact, and the structure is subjected to stress.a dynamic examination This approach considers the fluid's compressibility and stiffness as well as the structure's lexibility.are often overlooked. In 2- and 3-dimensional constructions, this approach is straightforward to employ, however the outcomes areFrequently, there are significant mistakes.The major goal of the second technique is to solve the governing equation for the fluid and structural domains.

governing equation of fluid domain for an ideal, homogenous, inviscid, compressible and irrotational flow in term of velocity potential variable, φ , is:

$$\nabla^2\phi = \frac{1}{C^2}\frac{\partial^2\phi}{\partial t^2} \qquad (2.1)$$

where C is the velocity of acoustic waves. By this assumption that fluid is incompressible, the Eqn.1 is conformed to Laplace Eqn.2.

$$\nabla^2\phi = 0 \qquad (2.2)$$