

Signature Verification System Using Matlab

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Abstract:--

Signature verification system is used as most biometric verification technique. There can be both online and offline verification system. Online Signature Verification is a procedure of confirming the author's personality by utilizing mark check framework. This framework can be use as a security framework, for example, confirmation for surveying section application and secret phrase substitutions. Mark confirmation innovation requires fundamentally a digitizing tablet and a unique pen associated with the all inclusive Serial Bus Port (USB port) of a PC. An individual can sign on the digitizing tablet utilizing the unique pen not with a standing his mark size and position. The mark is portrayed as pen-strokes comprising x-y organizes and the information will be put away in the mark database as a txt.file. These attributes particularly recognize an individual and can't be emulated or stolen. In this venture, the strategy for Bolster Vector Machine (SVM) is utilized to centers in confirming the mark.

Key words:

SVM (support vector machine), threshold value, verification.

Dielectric Studies of Some Bio-Materials at Microwave Frequencies and Correlation between Dielectric Parameters, Minerals and Vitamins Nutrient

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Abstract:--

An attempt is made to improve the Robert von Hippel measuring method and the Present work is concern with measurement of complex dielectric permittivity, conductivity, loss tangent and penetration depth of some bio-material. The measurement makes use of Robert Von Hippel technique or short circuited waveguide method. All the measurements were made in the microwave frequency range (Experiment is carried out at 9.9 GHz). In the present investigation it is interesting to note that the high dielectric constant is coupled with high dielectric loss in case of biological samples which contain large quantity of water but this is not the feature of a non biological materials. The influence of vitamins and minerals on the dielectric parameter is made using a correlation calculation is made between dielectric parameters, vitamins and nutrients.

Index Terms

Dielectric constant, dielectric loss factor, penetration depth, conductivity, microwave frequency and vegetables.

Awareness of Ransomware Attacks-Detection and Prevention Parameters

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Abstract:--

In this paper, cybercrime activities have grown significantly, compromising device security and jeopardizing the normal activities of enterprises. The profits obtained through intimidation and the limitations for tracking down the illegal transactions have created a lucrative business based on the users' files. In this context, ransomware takes advantage of cryptography to compromise the user information or deny access to the operating system. Then, the attacker extorts the victim to pay a ransom in order to regain access, recover the data, or keep the information private. Nowadays, the adoption of Situational Awareness (SA) and cognitive approaches can facilitate the rapid identification of ransomware threats. SA allows knowing what is happening in compromised devices and network communications through monitoring, aggregation, correlation, and analysis tasks. The current literature provides some parameters that are monitored and analyzed in order to prevent these kinds of attacks at an early stage. However, there is no complete list of them. To the best of our knowledge, this paper is the first proposal that summarizes the parameters evaluated in this research field and considers the SA concept. Furthermore, there are several articles that tackle ransomware problems. However, there are few surveys that summarize the current situation in the area, not only regarding its evolution but also its issues and future challenges. This survey also provides a classification of ransomware articles based on detection and prevention approaches.

Key-words:

Information Security; Prediction; Ransomware; Situational Awareness

A First Look at the Future of Gaming-Stadia

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Abstract:--

Cloud gaming is a new way to deliver high-quality gaming experience to gamers anywhere and anytime. In cloud gaming, sophisticated game software runs on powerful servers in data centers, rendered game scenes are streamed to gamers over the Internet in real-time, and gamers use light-weight software executed on heterogeneous devices to interact with the games. Due to the proliferation of high-speed networks and cloud computing, cloud gaming has attracted tremendous attentions in both the academia and industry since late 2000's. In this article, we survey the latest cloud gaming research from different aspects, spanning over cloud gaming platforms, optimization techniques, and commercial cloud gaming services. The readers will gain the overview of cloud gaming research and get familiar with the recent developments in this area.

Index Terms

Clouds, distributed computing, video coding, quality of service, computer graphics.

An Cyber Threat Prediction Mechanism Based on Behavioral Analysis

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Abstract:--

Detection of insider cyber threats is a challenging problem that cannot be solved by existing approaches because insider attackers have already bypassed security systems like firewalls, Intrusion detection & prevention systems, etc. [1]. With the traditional security systems rendered completely ineffective there is a need for a newer mechanism that based on the original traditional security systems that approaches insider threat as a new kind of cyber threat and helps prevent it.

Keywords:

Insider cyber threats, threat detection, cyber threat prediction.

The Innovative Mobile Operating System: Strakz OS

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Abstract:--

We have designed and implemented the Strakz OS an AI-powered operating system. Which concentrates on the user-friendly and User-Controlled policies. This Operating system is based on Linux Kernel which is an open-source Kernel invented by Linus Torvalds. The OS is also adapted from the Google's Official Mobile Operating System Android OS. The main Motto's for the creation of the Operating System are Battery Efficient and optimization on proper Resources utilization. The Operating System is released in two variants one with Google Services included and the one without Google Services. The entire OS is under the Control of AI where the turning on/off of the transmitters, like Bluetooth, WIFI and the Radio Power. The Operating System can also calculate the sleep time of the User with the help of the hardware like Smart Watches.

Keywords:

Operating System, Mobile, Smartphone, Google, Android, Artificial Intelligence

A Survey on Different Pattern Matching Algorithms of Various Search Engines

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Abstract:--

In Real-time world problems need fast algorithm with minimum error. Now a days many applications are use for searching results on web. There are many algorithms which are used for searching the results. Pattern matching method is one of them. In web application people deals with the different types of data, for example text searching, image searching, audio searching and Video searching. Every search engine uses different search algorithms for handling different types of data. This paper proposes an analysis and comparison of four algorithms for full search equivalent pattern matching like complexity, efficiency and techniques. The four algorithms are Naive string search algorithm, Rabin Karp String Search Algorithm, Knuth Morris Pratt algorithm, Boyer-Moore string search algorithm. This paper provides an analysis of above algorithms.

Keywords

Pattern matching, Text searching, Image searching, Audio searching, Video Searching, Search Engines

An Automated Apartment Management Desk

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Abstract:--

This is a Web based Application. The main purpose of this application is to solve the problems of the residents in the apartments. The problems based on Electricity, Water damage, Apartment inspections, drilling into walls, Violations. It consists of two modules Admin and User. Here admin will receive the complaints from particular apartment residents and also common problems among the users with their flat details. Users send his complaints of their flat with the flat details and user can also give his review or feedback. By accessing this application we can solve the residential problems easily instead of meeting the workers related to the particular problem. This is mostly beneficial for job holders for their time saving purpose.

A Framework on Text Mining and Structural Data Mining Techniques for the Detection of Grievances in Social Media

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Abstract:--

The social nuisance is an inhuman act of the individual causing damage to the whole community and burdens the society which is punishable by law. Structural data mining followed by sentiment analysis on online social media helps to detect the grievance patterns on texts. Taking on social networking sites, enables users to post their views and convey information about the author. Electronic media allows extraction of information and data from various databases which combines solutions from various fields. Aggregating and integrating the data to judge the opinion uses geospatial analysis which establishes correlations between the posts and crimes in various cities and towns.

Sentiment analysis techniques has to be conducted to analyse the vocabulary and intensity of grievance of a post of a particular location which reveals the crime rate of a location in real-time and helps to detect the patterns of crime. When analysing data, natural language processing techniques are used to process the unorganised data. They have to be refined by the experts making it clear. For the data analytics we employ machine learning techniques to create a traditional programming on the data automation. We employ machine learning algorithms for

1. Representation of knowledge including datasets, rules, decision trees, vector machines etc.
2. Evaluation must be done on candidate programs for accuracy, prediction, probability, cost, margin etc
3. Optimization of programs generated for the process of searching.

Sentiment analysis requires NLP, Text analysis to extract information from social sites, determining author's attitude and contextual popularity of the text. Geographically analysing crime related tweets/posts identify crime prone areas and used data mining techniques to study and detect the data. Measuring emotions in online texts is done by opinion mining by NLP and ML techniques for the automation of sentiments in the knowledge from different resources. Adopting a dictionary based approach for determining sentiments uses a new approach with 3 dimensions of valence, arousal and dominance. Matching techniques uses mapping of data, pattern matching etc to clearly identify the sentiment in the text. The methods employed are arithmetic mean and normal distribution to calculate mean valence and arousal. Then the values have to be plotted in a 2D circumplex emotional model to determine the position within the model. Video-to-text processing, image-to-text processing, and data from various online sources would also help improve accuracy. This type of study would help with informing others of the crime pattern both within and around their location, ultimately assisting them with staying in a safe zone by monitoring various social media outlets. The term sentiment classification is defined as detecting sentiment polarity of the subjective sentences. This sentiment classification is also divided into two categories: Binary sentiment classification and multi-class sentiment classification.

- i) Binary sentiment classification involves classifying sentiments either positive or negative.
- ii) Multi-class sentiment classification involves classifying sentiments into one of five categories: strong positive, positive, neutral, negative and strong negative.

The most common machine learning techniques used for sentiment classification include naive Bayes, maximum entropy, and support vector machine. Most sentiment analysis algorithms use simple terms to express sentiment. However the cultural factors, linguistic nuances, and differing contexts prevent researchers from drawing the sentiment accurately.

By using the combinations of above methods, valence or polarity of a subjective sentences can be generated, which can be used to detect the reliability of words

Sales Forecasting using Supervised Learning Methods in Artificial Intelligence

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Abstract:--

Sales Forecasting is the process of estimating future sales. Accurate sales forecast enables Companies to make informed business decisions and predict short – term and long term performance. Companies can base their forecasts on past sales data, industry-wide comparisons, and economic trends. A sales forecast is a prediction based on past sales performance and an analysis of expected market conditions. Working in sales is not always an easy game. Anyone in the role will tell you that they love it – but often want to pull their hair out. Companies have long struggles with how to include sales team insights into their operations forecasts. The potential benefits are great sales has unique insights into rising trends, market shifts, and new competitors. They are on the ground speaking with current and potential clients daily. Without their Intelligence on market, companies become blind to the opportunities and threats brought by markets. Forecasts from sales can be inaccurate, incomplete sometimes. The meaning of the terms “forecast” and “forecast accuracy” often differs depending on whether you’re speaking to Sales, Operations, Marketing, Finance, or others. It’s easy to inadvertently request the information from Sales that proves more detrimental than helpful for forecasts.

Removal of lead from polluted Musi Water using Biosurfactants (Rhamnolipids)

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Abstract:--

Hyderabad, the largest city discharges about 600 million litres of waste water into the River Musi. Due to indiscriminate urbanisation and lack of planning, Musi has been the receptacle for the domestic and industrial waste water in the city. High levels of chemical, biomedical, biological, pharmaceutical and industrial contamination cause ground water pollution has endangered aquatic life(1). People depend on the vegetables and fruits grown on Musi river bed leading to diseases and even miscarriages. The polluted water contains high levels of lead which leads to damage of nervous system, hematopoietic system, renal system, cardiovascular system, reproductive system etc.(2)

Although chemosynthetic surfactants could help ion desorption of heavy metals from polluted water, they cause serious impact on water environment and human health due to high toxicity and non-biodegradable. Bio surfactants have low toxicity and can be easily synthesised from renewable resources(3). Rhamnolipids are surfactants produced by microorganism from renewable energy resources are capable of removing heavy metals by complexation at optimum conditions. The present study involves the measurement of lead in Musi water collected from Peerzadiguda Area and the leafy vegetables (Palak) grown in the same area before and after treatment with bio surfactants.

Control of Seismic Performance in unsymmetrical High Rise Buildings using Shear Walls

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Abstract:--

Every Structure is expected to maintain good serviceability in its life cycle, but due to unexpected or continuous designed loads life of the structure reduces. Failure arises when the structures are exposed to extreme loads and to overcome the failures in terms of seismic conditions structures are analyzed to withstand for any zone of earthquake activity. In this context structural elements must be strengthened by adding Structural elements like Shear Walls, which can control the response of a structure with occurring effects. Shear wall system is one of the most commonly used internal load resisting system in high rise buildings. Lot of research has been carried to design and analyze the shear wall. But considering the environmental and economic aspect implementation of shear walls in optimized way to control the motion of structure takes complications. In this study a non-symmetrical structure which is of 84 meters height was considered for static and dynamic analysis. In present analysis different types of shear walls and zonal effects were considered up to maximum extent. The displacements and drifts of the structure were optimized by using shear walls in appropriate locations.

Key words:

Displacements, Non-symmetrical, Response Spectrum Analysis, Shear Walls, Storey Drift.

Bio-Metric Recognised Cash Banks

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Abstract:--

Identification and verification of someone nowadays may be a common thing; which can embrace door-lock system, safe box and vehicle management or perhaps at accessing bank accounts via CASH BANK, etc that is critical for securing personal data. The standard ways like ID card verification or signature doesn't offer perfection and dependability. The systems utilized at these places should be quick enough and strong too. Use of the CASH BANK (Automatic Teller Machine) that provides clients with the convenient note commerce is facing a brand new challenge to hold on the valid identity to the customer. Since, in standard identification ways with CASH BANK, criminal cases are increasing creating monetary losses to customers. For resolution the bugs of ancient ones, the author styles a new CASH BANK terminal client recognition systems. The chip of S3C2440 is used for the core of microchip in ARM9, moreover, Associate in Nursing improved enhancement algorithm of Thumb Impression image increase the security that client use the CASH BANK machine.

Key words:

Terminal, Thumb Impression Recognition, Image Enhancement, Gabor Filtering.

An Android Application for Booking Hostels in India

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Abstract:--

This is an app which is related to the booking of the hostels in all-over India, this app will help the students in India for finding best hostels near by the places which they are needed. It also takes the advance booking. It takes the monthly charges for the hostels. The hostels which are included in this they are providing all the facilities like AC, food, Wi-Fi, online and offline payments, 24/7 water supply, washing machine. The total hostel details are provided in the application. The people can also select the hostels according to their budget. They even have monthly rating, review, complains and feedback about the hostel which they have chosen. There will be 24/7 service centre to help the people for directions and other queries about the hostel. This application is very useful for the new generation that they don't need to waste the time for searching hostels at new places.

Key words:

Facilities, Advance booking, Service center.

Interpretation of Cyber Attacks Using Machine Learning Techniques

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Abstract:--

Machine learning techniques have been applied in many areas of research due to their unique properties like adaptability, scalability, and potential to rapidly adjust to new and unknown challenges. Cyber security is a fast-growing field demanding a great deal of attention because of remarkable progresses in social networks, cloud and web technologies, online banking, mobile environment, smart grid, etc. Diverse machine learning methods have been successfully deployed to address such wide-ranging problems in computer security. This paper discusses and highlights different applications of machine learning in cyber security. This study covers phishing detection, network intrusion detection, testing security properties of protocols, authentication with keystroke dynamics, cryptography, human interaction proofs, spam detection in social network, smart meter energy consumption profiling, and issues in security of machine learning techniques itself.

Key words:

Machine Learning, Cyber Security, Phishing Detection, Network Intrusion Detection, Cryptography, Spam Detection

The Role of Artificial Techniques in Cyber Security to avoid Cyber Crime

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Abstract:--

Due to high usage of internet now a days there is an increase in the cybercrime. Because of Internet on Things each and every application is working with internet and scope of threats are increased drastically. The emerging trends AI will minimize false positives. It will augment rules-based detection systems with the machine learning methods of clustering, pattern matching, association rules, and data visualization. Using these methods, AI will quickly filter out the most relevant alerts to present human analysts to investigate further while reducing both false positives and false negatives within an increased flood of alerts. This paper proposes that AI can remove Triaging, Threat Hunting, Incident analysis, Threat Anticipation .

Key words:

Cybercrime, Artificial Intelligence, Triaging, Threat Hunting, Incident Analysis, Threat Anticipation

Transforming Lead-Free Fuel: Filter less Filtration Process by Using Ultrasonic Waves

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Abstract:--

The main objective of the study is focused on removing the impurities in fuel substances. In the filtration process, sound waves are passed, as the longitudinal wave is also called as a compression wave. Ultrasonic signals are created with the help of transformer and that feeds into the transducer. When the output of the transducer is passed to the liquid medium it collides with dust particles and pushes the dust particles downwards. The subsequent ultrasonic waves retain the impurities in the bottom. Then the pure material is obtained in the upper part and the impurities in the bottom are removed by opening the lower part. The proposed method of ultrasonic filter will filter the dust particles in the liquid using polystyrene microscope and frequency sweep techniques, it generates the constant longitudinal ultrasonic waves in horizontal direction of a glass tube having large radius. This method makes the dust particles to settle down at the bottom and pure liquid will be present at the top layer.

Key words:

Filtration, transducer, micro-particle, ultrasonic waves

Smart Automation Technique to Collect Dry and Wet Waste Using IoT Module: to Achieve Our 'SBM' Mission.

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Abstract:--

The global waste production in now a days is increasing at a rapid rate, it is predicated that it will give rise to 28 billion tonnes per year by 2051, one-third of the whole global Asian continent is majorly contributed by India and china. The Main objective of the proposed method is to achieve clean India mission abbreviated as SBM. To make our urban and rural areas surrounding to be clean without any dry and wet waste. So our proposed method is designed to collect dry and wet Waste using IOT and embedded system Technology. The government has provided two dustbins in every place to dump the waste, one for dry waste and other for wet waste. The sensors node is kept inside the dustbins. When it becomes full it sends the signal to the Transmitter node. After Receiving the signal from sensor node, it updates details area and location in the common cloud IOT database. Then it sends the information to particular Location vehicle Driver to collect the waste.in the vehicle it has separate provision to collect dry and wet wate using conveyor belt and h-bridge motor driver circuit. After collecting the waste it updates the information to the common cloud database system. node

Radio Frequency Fingerprint-Based Intelligent Mobile Edge Computing for Internet of Things Authentication

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Abstract:--

In this paper, a light-weight radio frequency fingerprinting identification (RFID) scheme that combines with a two-layer model is proposed to realize authentications for a large number of resource-constrained terminals under the mobile edge computing (MEC) scenario without depending on encryption-based methods. In the first layer, signal collection, extraction of RF fingerprint features, dynamic feature database storage, and access authentication decision are carried out by the MEC devices. In the second layer, learning features, generating decision models, and implementing machine learning algorithms for recognition are performed by the remote cloud. By this means, the authentication rate can be improved by taking advantage of the machine-learning training methods and computing resource support of the cloud. The results shows that the novel method can achieve higher recognition rate when compare with traditional RFID method by using wavelet feature effectively, which demonstrates the efficiency of our proposed method.

Stress Management at Workplace

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Abstract:--

Stress is normally unavoidable part of everyone's life living in this world. It portrays a negative notion that can have an impact on one's mental and physical well-being. This paper is aimed at helping members to understand the signs of stress and to develop strategies to deal with it, as well as building up their own personal resilience. This study provides practical advice on how to deal with work stress. This paper implies Work-related stress occurs when there is mismatch between the demands of the job and the resources and capabilities of the individual worker to meet those demands. Subjective and self-reported evaluations of stress are just as valid as 'objective data', such as statistics on presenteeism, absenteeism, and health (physical and psychological). It is intended that employers, managers use this booklet as part of an initiative to educate on the management of work stress. Discussed are the nature of stress at work, the causes and effects of stress, as well as prevention strategies. Also discussed are the roles of the organizational culture in this process and resources to be drawn upon for managing work stress.

Keywords

Organizational stress, Stress management, Work stress

Survey in Business Intelligence

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Abstract:--

Business Intelligence delivers a rich set of benefits that drive significant and tangible return on Investment. It removes the complexity of converting raw data into meaningful business intelligence by giving organizations the power to transform data from multiple sources into accurate, consumable information that can be shared securely throughout the enterprise. It enables users to make informed business decisions quickly and confidently by providing the query and reporting tools they need to find, share, manage, publish and analyze information. The goal of Business Intelligence is to enable management to make more intelligent decisions on the basis of knowledge extracted from data. Does this mean that having data is always good, that having more data and extracting more knowledge from it is better, that and that knowledge can be derived only from data?

The paper also aims at describing processes of building Business Intelligence (BI) systems. Taking the BI systems specifics into consideration, the author presents a suggested methodology for the systems creation and implementation in organizations. The considerations are focused on the objectives and functional areas of the BI in organizations. Hence, in this context the approach to be used while building and implementing the BI involves two major stages that are of interactive nature, i.e. BI creation and BI “consumption”. A large part of the article is devoted to presenting Objectives and tasks that are realized while building and implementing BI.

Keywords:—

Business Intelligence, business decision-making, analytics, memory, monitoring

Parametric Analysis of Titanium Alloy Using Abrasive Jet Machining Process

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Abstract:--

Titanium has begun to be used widely in engineering applications due to their favourable properties such as good corrosion resistance, high specific strength and the highest strength to weight ratio of any metal. It has obtained widespread use in the aerospace and biomedical fields. However Titanium is highly reactive and has high hardness at elevated temperatures. This coupled with its low thermal conductivity and elastic modulus makes it a hard to machine material. In this paper an effort has been made to study and optimize the drilling process of a hole by making use of Abrasive jet machining (AJM) on a Ti-6Al-4V composite material. The effect of process parameters such as Pressure, Abrasive flow rate, standoff distance and material thickness on Material Removal Rate (MRR) and surface roughness has been studied. The experiments were designed and conducted on the basis of Taguchi's experimental design of L16. Apart from single level optimization, multi optimization was also performed by making use of Genetic Algorithm (GA).

Keywords:

Titanium Ti-6Al-4V, Design of experiments, Orthogonal Array, Taguchi, AJM, Genetic Algorithm

Cold-formed steel section with Bolted Connection- A review

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ABSTRACT

A wide variety of open-section cold-formed steel (CFS) sections may be made by rolling or pressing thin gauges of sheet steel into the shape of channel sections, Z sections, hat sections, and other shapes. For both residential and commercial projects, the usage of CFS as a structural framework has increased during the last several years. Therefore, it is important to study how CFS parts interact and what that means for the whole system. With a focus on Euro code 3: BS EN 1993-1-3 and Euro code 3: BS EN 1993-1-3-8, design specifications for bolted connections of CFS sections, previous research is reviewed. In this study, the results of prior research are described.

“Keywords:review,cold-formedsteel,boltedconnection,finiteelementmodelling.

1.INTRODUCTION”

These days, many building companies are striving for more sustainable growth by constructing structures with less resources. Steel is the most recyclable material in the world, allowing for lighter, more fuel-efficient automobiles and safer, higher constructions. Steel member's better sustainability performance reduces environmental impact over the whole life cycle compared to competing materials. The two primary types of structural steel are hot-rolled and cold-formed [1]. “A blast furnace or electric arc furnace[2] is used to forge hot-rolled steel, while cold-formed steel is manufactured by rolling or pressing thin sheets of steel into items at room temperature.[3][4][5] Since hot-rolled and cold-formed steels differ greatly in their strength and structural performance, the production method is important to their performance.”

When it comes to automobiles, energy, machinery, and other large-scale machinery and equipment, steel has become a go-to material for many different companies. Energy, transportation, and water infrastructure all rely on steel as a key component, as do commercial and residential construction projects alike. Industry seems to be warming up to new goods and technology, such as the Industrial Building System (IBS). According to the Malaysian Iron and Steel Industry Federation, Malaysia had a 15.3% rise in steel imports in 2016 compared with 2015. (MISIF). One-quarter of the country's total imports of steel come in the form of hot-rolled steel, cold-rolled steel, and bars. A 41 percent reduction in ASEAN exports of steel goods from 2.3 million tons in 2015 to 2.22 million tons last year is a fall of 2.7 percent. Cold-rolled steel products account for 25% of exports, while pipes and tubes account for 23% and galvanized sheets account for 11% of all steel exports. “Even though exports of Malaysian steel are declining, this data shows that cold-rolled or cold-formed steel sections are still extensively used in the country's manufacturing process.

Cold-formed steel (CFS) sections, which are manufactured by cold-rolling or brake-pressing into different forms, might be beneficial to building buildings because of their low density and low weight (such as channels, Z-sections, hat sections, and other open sections).” A typical yield stress for cold-formed members is 350 MPa for regular steel and lately as high as 550 MPa for high strength steel [6]. Section thicknesses are normally between 1 millimeter and 3 millimeters. As a result of cold rolling, strain hardening causes a greater rise in yield strength [7]. [7] Strain aging causes a loss in ductility and a rise in ultimate strength, both of which are dependent on the metallurgical qualities of each individual material.

There has been an ongoing supply of CFS available for sale since steel mills began producing flat sheets of steel over a century ago. During the 1850s, CFS members were employed in the construction of structures in America and Great Britain. CFS construction materials were not widely accepted in early 20th and early 30th century since there was no appropriate design standard and inadequate information on their use at that time in building standards. When the Virginia Baptist Hospital was built in Lynchburg, Virginia, in 1925, it was one of the earliest examples of the usage of CFS as a construction material. Cold-formed steel has come a long way since its first use in construction.

In the last several decades, the use of CFS as a structural frame for residential and multi-story commercial structures, such as roof systems, wall studs, girts, and steel-framed houses, has increased significantly. [8]. Since cold-formed steel has properties that make up for the drawbacks of traditional goods, this has become possible. In order to enhance the structural function of a structure and its aesthetic appeal at a cheaper cost and with more ease of use than traditional materials such as concrete, fiber-reinforced plastic (CFS) has become increasingly popular among architects, engineers, and constructors. To support claddings on exterior building envelopes, hot-rolled steel sections are usually used, whereas CFS sections are employed as secondary structural components.

“There are design codes for cold formed steel structures available, such as those issued by AISI (1996), the British Standard (1998), and Eurocode 3: Parts 1-3, for typical usage of cold formed steel sections (2006). Design guidelines and comments for cold formed steel buildings, on the other hand, are accessible. CFS members in Europe are designed using Eurocode 3 (EN 1993-1-3) and Eurocode 8 (EN 1993-1-8), whereas in the United States researchers turn to the American Iron and Steel

Consultants on Highway Construction To Estimate Total Cost and Maintenance

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Abstract

It is difficult for STAs to manage complex transportation networks while coping with aging, experienced, and turnover STA construction workforces as well as a rise in the use of advisory services to monitor STA construction operations. Keeping up with project needs requires the employment of construction-related human resources, which STAs get from Construction and Engineering Inspection (CEI) consultants. However, no data has been gathered on the effect of CEIs on project costs and schedules. Data from 305 completed highway building projects across 16 STAs is being used to fill up this information gap. CEI consultants were found to have more full-time equivalent construction employees on their projects than projects using solely agency personnel, according to the research. When compared to programs that depended only on agency employees, it had no impact on project costs. CEI consultants The average expense overrun on CEI projects was 20.2 percent, but the average schedule overrun on projects staffed by agencies was 27.7 percent. On average, the project was completed sooner than expected. A statistically significant difference existed between the beginning and ending times of the experiment.

More and more complicated projects are being built by STAs under more aggressive time constraints. STAs are going through a lot of personnel changes at the same time that this transformation is taking place. STAs are losing veteran staffers to retirement, and they are being replaced by younger, less-experienced workers who are taking on greater responsibility early in their careers. Retiring employees in certain STAs are not even being considered for replacement. STA employees across all divisions are feeling the effects of these adjustments, but those in charge of building roadway infrastructure are especially hard hit (1, 2). Between 2000 and 2010, STA lane kilometers rose by an average of 4.1 percent, whereas the number of full-time equivalent employees declined by 9.7 percent over the same transit period. In response to the controlled road system standardizing full-time equivalents (FFE), STAs' FTE per million dollars of capital investment reduced by an average of 37.3% for responding STAs (3). Many services formerly performed by STA personnel have been outsourced due to

Human Health Risks from Water Contamination with Heavy Metals

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Abstract:

Soil, surface, and mechanical assembly water all exhibit varying levels of toxicity due to the presence of a wide range of heavy metals, including lead, arsenic, cadmium, chromium, and mercury. There are several ways in which heavy metals are emitted into the atmosphere, some of which are harmful. With international connections like WHO (2008), USEPA, EUC, EPA, split and national, the centres selected were more than the most remarkable and interactive cutoff. Waste water from rapidly growing mechanical areas, mine tailings and high metal waste products and tainted gas may be counted on to contaminate the water supply. Critical metal destructiveness, which has been connected to a slew of new dangers, has emerged as a major concern. Despite the fact that these metals do not have patents, their detrimental effects on the human body and its proper functions endure..

Introduce

Consumers are frightened to the point of paralysis by the frequent degradations of the dangerous chemicals. Toxins brought in by industrialization, technological change, and the exploitation of common things, agricultural waste, and surrounding squanders are constantly contaminating the land and water-gifted planet. Large metal bags will be the most harmful if these new compounds are not biodegradable due to their predictable character, harmful tendency, and affinity to accumulate in living things. Because of their long-term stability in the environment and their documented potential for causing harm, toxic metals such as arsenic, arsenic, lead, cadmium, and mercury may represent a major concern. Control may be disrupted by metal embryos, gastrointestinal (GI) and cardiovascular (CV) processes, lungs, kidneys, liver, adrenal glands, and bones. The ability of the mind to maintain a clear distinction between reactivity and potentially dangerous metals is severely constrained. People, even those who are not exposed to professional threats, continue to express their metals in their body via a variety of sources, such as fuel or incentives. Dietary rules that let heavy metals stay in the body, such as those seen in the Mediterranean diet, may minimise the risk of metal damage trends (Rajeev Kumar et al., 2014). Another way to say it is: There is a risk that contaminated water and other food items will be burned through in an attempt to reach or bridge a bank of water resources.

The enormous metal invasion referred to in the text is only one of numerous instances from throughout the globe. There may be certain limitations or terminations due to the large number of sources collected via the game plan. Indonesian producers have attempted to cover the most ludicrous number of features, some of which are instantly split down as follows: a For two unique metals, Zn and Cu, there has been a significant drop in lead fixation patterns on creature size formation, with metal fixation patterns in urban surges eliminated.

Similar to fish that live in dirty fights, they have acquired a physiological resistance to metals falling together because to a massive amount of exposure. A frequent source of basic waste is large metals present in water, algae, fish, and other marine foods. Researchers/tension toxicologists are always thinking about the universe of massive metals and their clever affect on people when they come up with this theory. Primary metals have a high level of non-corruption due to their strong negative impacts. Compounds that build up over time are needed to safeguard these essential components from regular wear and strain. Large metals may have disastrous effects on the surrounding environment, even at low concentrations. Due to bioaccumulation, these risks may be mitigated (Widianarko et al., 2000; Ganagaiya et al., 2001). There seems to be a circulation of destructive metals in floods caused by mechanical and urban/regional systems.

Other living things, including humans, are in danger. To maximise the amount of follow-metals, particularly significant metals, in our streams, we must study urbanisation and industrialization that is extricated. (Seema). Compounds that pose a threat to human health may be found in soil and water (Abida et al., 2009).

Deep Metal Water Contamination
Wellspring Seasonal ingredients are the focus of this article.

Contingency planning of highway projects by Modeling the Construction threat ratings

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ABSTRACT

The relevance of risk assessment in construction projects has been underlined in previous research, and several methods for responding to possible hazards have been advocated for each phase of the project. The right distribution of contingency monies is one way to react to risk. The goal of this study is to determine the relative relevance of the risk factors mentioned in relation to the cost contingency amounts, as well as how much of an influence they are believed to have on costs and schedules. Survey answers from experts working on highway transportation projects were used to assess the pre-identified risk factors. Regression modeling was utilized to examine how preset cost contingency levels in these projects and the risk ratings given by project experts were related. According to the research, poor constructability evaluations had a large effect on calculating the owner's contingency amount, while adjustments by the owner's request had a substantial impact on a project timeline. Estimating risk-appropriate contingency percentages using these models and techniques might be useful throughout the planning phase of comparable highway building projects.

Author keywords: Risk; Planning; Contingency; Highway; Parametric modeling; Contracting.”

1.Introduction and Problem Statement”

Creating contingency plans for specific project components or the entire project base cost is one way to accurately anticipate construction expenses in the future. Some estimates have found it difficult to designate the right amount of cost overrun and unused contingency to reduce project cost overruns at the project completion. If the predetermined distribution of contingency amounts is too low, it might lead to project cost overruns; on the other hand, if it is too high, it would tie up money that could be used for other purposes. Because of this, a more thorough evaluation of project risks is required in order to properly budget for contingencies.

Previous research has shown that transportation professionals are more concerned about the cost and time consequences of risk. Three-tier risk analysis and contingency estimates for highway projects have been developed via a large amount of research, which includes detecting risks, examining hazards qualitatively, identifying probable difficulties and then completing quantitative evaluations of risks. Active risk management is a component of this technique as well.. Risk and uncertainty methodologies used by Reilly and Brown (2004) are used to provide a project cost estimate that gives a range of probable expenditures. Estimated costs are being verified according to the name of this approach (CEVP). The Delphi approach, according to Olumide et al. (2010), was used to produce sliding-scale contingency graphs for three stages of highway construction. Road construction contingency costs may be predicted using a best-fit probability distribution function developed by Love et al. Artificial neural networks, according to Lhee (2009), may be used to estimate the cost effect of transportation infrastructure improvements. When estimating the amount of schedule contingency necessary at various times in project development, Gurgun and colleagues (2013) suggested a technique. The completion rate is between 25 and 50 percent. El-Touny and colleagues (2014) used the analytical hierarchy approach to model cost contingency based on the most important risk indicators. They found that (AHP). Chou et al. (2009) developed a cumulative probability distribution function that may be used to estimate the probabilistic cost of highway bridge replacement projects using real data from the Texas Department of Transportation (TxDOT) Using Bhargava's model-based economics, cost overruns in highway building projects may be predicted. Ashley et al. (2006) utilized risk management methodologies to create a guideline for examining risk in highway projects, including a quantitative risk analysis to anticipate cost unforeseen. A variety of dangers have been uncovered in the building business. Thus, it has not been well investigated how risk drivers affect the cost of contingency plans. There was no indication of a link between construction risks and project contingencies in published research articles. We carried out this study to fill in the information gaps about the risk factors in transportation construction and their link to project contingencies. According on a review of the scientific literature, 31 possible risk factors were identified (listed in Table 1). Risk drivers are a term used to describe the key causes of risk events. An extensive review of relevant literature and in-depth interviews with

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CONTROLLED SOFT CLAY ENGINEERING BEHAVIOR AT HIGH WATER CONTENT

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ABSTRACT

In-situ deep mixing has gained widespread acceptance as a method of increasing bearing capacity and preventing settlement in soft ground. Cemented soft clays with high water content were studied for their compressive and tensile strength, stiffness, and expansion. This research examines a wide range of factors in order to get a better understanding of the engineering behaviour of cement-stabilized soft clays. As a result, the geotechnical engineering behaviour of stabilised soft clays and the quantity of cementing agent that is required to achieve the appropriate strength development may be explained. The cementation binding strength increases as the w/c ratio decreases. We discovered that for low w/c ratios and longer curing durations, stress-strain curves of the treated samples climbed rapidly to peak values, then promptly declined. As w/c ratio is reduced (or cement content is increased), both C and rise, according to this research, but C climbs and falls with increasing curing time. Increasing the quantity of cement and the curing time resulted in an increase in pre-consolidation pressure and a drop in the compression and swell indexes. In order to improve fine grained soil, the clay-water/cement ratio (w/c) is the most significant element. Keywords: It is important to know the properties of soft clays such as stress-strain, unconfined compressive strength, and compressibility.

INTRODUCTION

The low strength and extreme compressibility of Bangladesh's soft clays provide unique challenges to engineering design and construction in various locations of the country. For deep excavation operations in soft clays, proper ground improvement methods are required for suitability and deformation control. It is possible to increase the intrinsic shear strength and lessen the compression of such clay deposits by preloading them with vertical drains (e.g., PVD or sand drain) (Siddiquej et al., 2002). Admixtures such as cementing agents may be used to increase the cementation bond level as an alternate method. In this cemented condition of clay, the resistance to compression and subsequent strength growth increases as curing time increases. An in-situ soft clay mix with a cementing agent is not feasible. DMMs have been created over the last three decades in order to create columnar inclusions in the soft ground and so alter the whole soft ground to composite grounds. The Port and Harbour

Research Institute in Japan began researching and implementing this technology in 1975. (Nagaraj et al., 1998; Miura et al., 2001). (Hashizume et al., 1998) explored the behaviour of the enhanced ground of the group column type DMM (Probaha et al., 2000). Soil-cement columns were experimentally and statistically investigated to see whether the surrounding clay increased in strength over time (Nagaraj et al., 1998; Miura et al., 2001). Using cementing agents and high water content clays, researchers (Nagaraj et al., 1998) and (Miura et al., 2001) investigated the fundamental factors of strength development. Several studies have examined the laboratory strength and deformation properties of stabilised soft clays at certain clay-water contents (Hashizume et al., 1998) and (Kamaluddin et al, 2002). There are no works in Bangladesh that use the deep mixing approach to enhance the water content of soft clays by distributing cement additive using the wet method. As a result, it is impossible to understand the behaviour of the stabilised clay material under different circumstances by studying it at a certain water content. Engineers need to investigate Bangladeshi soft clays at high water content and utilise them to explain some of the observed engineering behaviour for the deep mixing approach in a well-controlled laboratory environment before applying it to the field. To mimic the conditions of deep mixing, this research examines the stress-strain-strength and compressibility properties of cement stabilised soft clays at high water contents. To better understand the engineering behaviour of cement-treated clays, efforts have been made to determine the essential parameters that influence the strength development with curing time, clay type, and clay-water concentration, as well as to manage the input of cementing agent.

Development in Reinforced Concrete Retrofitting Methods and Technology

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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 restoration. 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.

Copper slag and eggshell powder were used to experiment with the attributes of concrete strength and durability for M30 and M40 concrete grades.

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Abstract:

Concrete is always expected to be stronger and more durable than in the past while being cost and energy efficient. Moreover the major advantages that concrete possesses over the construction materials have to be conserved. The possibility of being fabricated practically anywhere, the ability to make the form imposed by the shape of a mould and a low cost of components 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 led 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, Eggshell Powder, Compressive Strength, Split Tensile Strength

substances for development of the ordinary Portland cement, as pointed out by Teiktheluin 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.

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

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 mixing proportion of 1:3 by a chemical composition and strength properties of ESP in cements mortar. For compression, over and above 5 percent of ESP replacement, admixtures such as saw dust ash, fly ash and microsilica have been utilized to pump up the power. In contrast with traditional concrete, it was found that replacement of 5 percent ESP with 10 percent micro silica leads to the high strength of hard concrete. The properties of

Effect of Moisture Content on the Compressive strength of a Local Rammed Earth Construction Material

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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.

Index Terms rammed 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 in Europe, 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 composition of rammed earth materials to maintain their mechanical properties. Maniatidis and Walker (2003) [7] reviewed the recommended soil composition in cement stabilized rammed earth as proposed by various authors as follow: 70 % for sand & gravel and 30% for clay & silt [8-10], 75 % for sand &

Effect of structural lightweight aggregates in mitigating thermal bridging in buildings

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ABSTRACT

An effort is underway in the EU member states to encourage energy efficiency improvements in buildings and fulfill the increasing demand for indoor comfort while also decreasing the energy consumption for space heating and cooling. NWC construction may be replaced with SLWAC construction to improve indoor air quality and reduce energy usage. A structure's energy efficiency may be improved through SLWAC in the end. Concrete mixtures made from SLWAC and NWC have their thermal characteristics examined. With the use of two-dimensional heat transfer software Term and a building energy modeling program Energy Plus, a case study was conducted to examine how SLWAC influences thermal bridge heat losses and energy consumption. It has been shown that SLWAC may enhance building energy efficiency, making it a viable option to NWC.

1. Introduction

Due to technical advancement and rising living standards, the quality of buildings has substantially increased in recent decades. In order to fulfill today's comfort standards, a building's design must take a number of factors into account.

In most cases, the only way to maintain a comfortable inside temperature is to use air conditioning, which accounts for a significant portion of the energy used by buildings. [1].

40 percent of EU energy use was accounted for by buildings in 2010. (EU) [2,3] (about 30% in Portugal [4]), Residential constructions accounted for over two-thirds of all building energy usage, according to a new report. There was a wide variation in the amount of electricity utilized in EU residential buildings in 2009, mostly due to climatic variances.

Space heating accounts for 60–80 percent of total household energy use [5]. For the most part, these requirements are being met by repairing the country's deteriorating and poor construction. A similar situation should exist in other countries. It is critical to examine this problem from the standpoint of both new construction and historic preservation. Improving a building's thermal envelope and installing energy-efficient equipment are just a few of the methods to cut down on traditional energy use while also helping the environment. Another option is to integrate renewable energy sources.

“In recent years, EU member states have been pressed to adopt the EU Directives on the Energy Performance of Buildings (EPBD). It is a newer version of the original, like Directive 2002/91/EC [7] and the more recent Directive 2010/31/EU [3].” Buildings in the EU can be made more environmentally friendly, as both writers note, and they provide ideas on how to do so.

Buildings and building units must meet minimal requirements for energy efficiency, This must be defined by each member state [3]. That all heat transmission mechanisms and other factors (e.g., heating and air-conditioning systems) are thoroughly examined, passive heating and cooling components) be taken into consideration when assessing compliance with standards (such as shading control).

For the energy efficiency of a building, the envelope is one of the most critical components. As a result, a thorough investigation of conduction heat losses through the building envelope is necessary to identify probable causes of poor thermal behavior and to make the most appropriate design and construction choices.

Thermal bridges and other components of the building envelope are critical to the transfer of heat. Wall/floor/ceiling connections, for example, might introduce thermal bridges into the building envelope because of their varying thermal conductivities, the thickness of the fabric they use, or the difference in temperature between the interior and the exterior [8,9]. As a general rule, thermal bridges modify the flow of heat and the temperature within a building. [8]. Heat loss via thermal bridges may account for up to 30 percent of a building's overall energy consumption in the EU, according to research [10,11]. Similar findings were found by Theodosius and Papadopoulos [12].

Concretized structural elements, such as columns and beams, are a major contributor to thermal bridges because of their high thermal conductivity compared to the surrounding building materials' low one. Lightweight aggregate concrete may make a huge difference in this situation. Due to its decreased density, lightweight aggregate concrete (LAC) is possible to minimize the permanent load as well as the thermal conductivity of structural parts. structural lightweight aggregate concrete (SLWAC) may minimize thermal bridging in place of

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Elastic-Plastic Load-Carrying Potential of Metal Members

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Abstracts.

The load-sporting capacity of metallic structures and individuals subjected in most cases to bending relies upon in large measure on neighborhood stability of their compressed flanges and bending webs in determined cross-sections and areas. relying on nearby balance, the elastic or plastic, ultimately the elastic-plastic evaluation and layout may be implemented. The real standards for layout of steel structures comprise extraordinarily unique policies for elastic analysis through the elastic idea and for plastic analysis by using the plastic principle. The elastic-plastic analysis and layout of metallic contributors are in the meantime still complex from theory, fashionable and application factor of view. The real elastic-plastic behavior of the metallic members is complex electricity and balance problem. consequently, the representative experimental knowledge and outcomes approximately the real elastic-plastic behavior and mechanisms of failure of the metallic individuals were very important from the medical and implemented factors. the writer of paper realized in previous time the huge experimental research inside the range of this purpose. The paper contains selected understanding and outcomes of the preceding experimental-theoretical research of the elastic-plastic nearby stability of the steel members subjected more often than not to bending. The good enough slenderness – stress relation and methodology for sensible calculation of the elastic-plastic bending load-sporting ability of the metallic go-sections and participants are offered inside the paper.

1 Introduction

The load-carrying capacity of steel structures and members subjected mostly to bending depends in large measure on the local stability of their compressed flanges and bending webs in decided cross-sections and areas. Depending on local stability, the elastic or plastic, eventually elastic-plastic analysis and design can be applied. The actual standards for design of steel structures contain relatively detailed rules for elastic analysis by the elastic theory and for plastic analysis by the plastic theory. The elastic-plastic analysis and design of steel structures and members is meanwhile still problematic from theory, standard and application point of view, [1-3]. The paper contains selected knowledge and results of the previous experimental-theoretical investigation of the elastic-plastic local stability of the steel members subjected mostly to bending. The adequate slenderness – strain relation and methodology for practical calculation of the elastic-plastic bending load-carrying capacity of steel cross-sections and members are presented and compared with procedures that are applied in some selected standards.

2 Local stability and classification of steel cross-sections

The local stability, compactness and slenderness of the steel members and their cross-sections are relative. They depend on the loading level or material utilization, and on the buckling resistance

of cross-sections and their compressed flanges and bending webs. The buckling resistance and the real behavior of compressed flanges and bending webs depend on more parameters (material properties, geometrical dimensions, material and geometrical imperfection, boundary conditions). Therefore, the steel cross-section compactness or slenderness judgments are complicated stability problem that has been theoretically analyzed through respective differential equation systems [1, 2]. For usual cases of the steel cross-sections slenderness β (width to thickness ratio) of their webs and flanges is the characteristic parameter of buckling resistance ($\beta = d / t_w, b / t_f, c / t_f$), Fig 1.

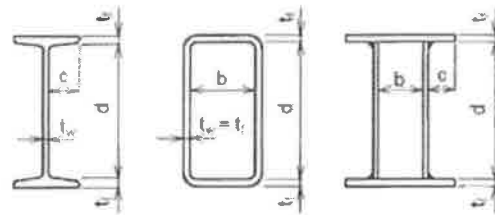


Fig. 1. Usual steel cross-sections and their dimensions.

The new European standard EN 1993-1-1:2005 and transformed national standards for the design of steel structures (CSN EN 1993-1-1, STN EN 1993-1-1 and others) contain the specific classification of the cross-sections due to dimensions and slenderness of their compression and bending parts. In these standards four classes of the cross-sections are defined.

Class 1, 2 and 3 can be considered as the compact or semi-compact cross-sections for the defined level of the material utilization. In this case of the cross-sections the full sectional dimensions can be considered in calculation. Class 4 presents slender cross-sections. In this case the effective part of cross-sections must be considered in calculation.

The standards define maximal values of the slenderness β for individual webs and flanges of the cross-sections subjected to compression or bending, otherwise combined compression and bending: β_{01} for class 1, β_{02} for class 2 and β_1 for class 3.

The web slenderness β_1 is very important for the standards and practical design of steel cross-sections. If slenderness of the web $\beta = \beta_1$, then with full elastic bending moment M_{el} of the cross-section can be calculated by simple bending theory,

$$M_{el} = f_y W_{el} \text{ or } M_{el} = f_y W_{el} \gamma_{M0} \quad (1)$$

where f_y is the yield stress, W_{el} is the elastic cross-section modulus and γ_{M0} is the material partial factor.

The exact estimation of the limit web slenderness β_1 is problematic, because it depends on real boundary conditions and on production imperfections. Only the classic critical conception allows clearly determination of the web slenderness β_1 . According to this conception the critical normal stress for the elastic limit stage

$$\sigma_{kr} = k_\sigma \sigma_E = 190\,000 k_\sigma / \beta^2 \quad (2)$$

EVALUATION OF DEEP LEARNING METHODS IN TWITTER STATISTICS EMOTION EVALUATION

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ABSTRACT:*This looks at offers an evaluation of numerous approaches used for measuring emotions in Twitter statistics. Deep learning (DL) techniques in this area have gained traction among academics, who participate on an equal footing to solve a broad range of issues. Two groups of neural networks, CNNs are used to find images, and recurrent neural networks (RNNs), which could be applied in natural language processing (NLP) effectively. Explicitly two forms of neural networks are used for this reason. These photos are used to evaluate and compare CNN ensembles and variations and long-term memory (LSTM) RNN category networks. In addition, we equate the kind phrase embedding structures Word2Vec and the worldwide phrase representation vectors (Glove) with apparel. To test these techniques, we have used knowledge given by the Seminal (Seminal), one of the most well recognized foreign workshops on the web. Various experiments and combos are applied, and the better outcomes for each variant are correlated with their average efficiency. This research contributes to the field of sentiment analysis by evaluating the results, blessings and challenges of these approaches by means of an assessment approach utilizing an unmarried testing system for the same dataset and machine setting.*

KEY WORDS:*Emotion estimation, in-depth learning, neural network convolution, LSTM, phrase embedding models, Twitter statistics.*

INTRODUCTION:

Owing to the boom in the usage of social media in recent years, emotion appraisal has been recognized by a broad variety of human beings with diverse hobbies and motives. When consumers around the world are able to share their opinions on roughly specific subjects relevant to governance, education, travel, subculture, commercial products and issues of well-known concern, extracting information from these documents is becoming a matter of considerable importance. In addition to the details related to visited places, purchasing decisions, etc. for consumers, understanding their feelings as they

convey themselves by their communications in various structures has turned out to be valuable information for estimating the perception of people regarding a particular issue. A very popular strategy is the categorization of the polarity of a text in consumer pride, disappointment or neutrality words. Polarity may differ from effective too bad in terms of marking or a large spectrum of levels, but usually denotes feelings of textual material that vary from happy to unhappy mode. There are various tactics used for the study of emotions, focused mainly on one-of-a-kind herbal language processing and system learning methods for the extraction of proper functions and classification of texts into relevant polarity marks. In spite of the popularity that deep learning approaches have gained for several years, numerous deep neural networks have been implemented with achievement on the ground. In particular, neural networks and LSTM networks proved to be efficient for responsibilities in terms of sentiment analysis. Different empirical results have demonstrated their efficacy alone or in conjunction with them. Most techniques for extracting features from terms, Word2Vec and global phrase representation vectors (Glove) are common in the field of natural language processing. The accuracy of the above techniques is strong, but it is no longer excellent, which is why sentiment analysis is a constant, accessible research problem. These researchers aim to broaden new approaches or improve existing methods. As the present approaches provide a broad spectrum of network setup, tuning and many others., a study upon the evaluation of the the strategies that have already been used remain important, so you have a good understanding about

Examining expressive attribute-based encryption with lattices

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Abstract

Encryption based on attributes Using the internet to store data is known as cloud Expressiveness Control of access at the granular level Cryptography based on lattices Fine-grained access control over encrypted data may be enforced using Attribute Based Encryption (ABE). ABE schemes are presently used in cloud computing and storage systems because of their expressiveness. Quantum cryptanalysis can break down conventional ABE systems based on bilinear pairing, whereas ABE methods based on lattices are impervious to quantum assaults. Using the lattice framework, we investigate the expressiveness, complexity assumptions, efficiency, and security of a wide variety of attribute-based encryption algorithms in great detail. Also discussed are lattice-based attribute-based encryption algorithms that need additional investigation in order to outline future paths for cryptographers.

Introduction

A classic public key encryption system encrypts data before it is sent to a specified recipient who can decode it and retrieve the plaintext message, which is suitable for sensitive information transmissions and storage capable in the event that the recipient's identity is known when the data are encrypted, by the sender. However, there are exceptions to this rule. situations in which the data owner may choose to disclose the users according to a predetermined policy the qualifications of those involved. It was suggested by Sahai and Waters [1] in 2005 that Attribute Based Encryption (ABE) to satisfy the above-mentioned needs initially. The private key and the public key are the same in this system. Attribute sets and private ciphertext are linked to each other. the ciphertext can only be decrypted by the key if and only if there is a match with respect to private key characteristics and ciphertext. Error-tolerant encryption may be achieved using this method. May be used to implement finely grained access controls

using biometrics control of encrypted data access as well. In spite of this, the absence of the scheme's capacity to articulate itself restricts its use to a single system. Cryptographers have devised methods to increase the expressiveness of two different types of attribute-based encryption. A private key or a public key is related with the access policy. key policy attribute-based encryption (KP-ABE) is the method used to encrypt this data. As well as Ciphertext Policy Attribute Based Encryption (CP-ABE) In the first case, the attribute set is linked to a ciphertext. Access policies are related with a private key's use. Notwithstanding this, the situation is inverted in the latter: It is linked to the private key. access is granted to the ciphertext with the attribute set. policy. If and only if the decryption is successful in both settings, access policy is satisfied by attribute set. The KP-ABE described above. The usual situation includes CP-ABE schemes and CP-ABE programmes. Because they are issued by a single body, private keys are useful for data management inside a single trust domain or group of people. But in many cases, data is required. in accordance with an agreement that covers many companies areas of trust and confidence. Multi-authority is required to satisfy the criterion. Multiple parties may use attribute-based encryption techniques. It is suggested that you participate in a position of authority [11–14]. There are two types of attribute-based encryption schemes: An attribute-based encryption system for a tiny universe and [14–16] in the big universe attribute-based encryption how the attribute universe is defined. In the first case, the qualities are listed. the size of the attribute space is polynomial and fixed upon setup. ally constrained by the specified security constraint. Furthermore, the general population is aware of this. The size of a parameter is proportional to the number of characteristics. The size of the attribute universe is enormous in the second case. It is possible to use any string as an attribute, and there is no requirement to

EXPERIMENTAL STRATEGIES OF APPLYING STRONG AUTHENTICATION USING BIOMETRIC FINGERPRINT MATCHING PROCEDURES USING MSFPBT

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Abstract: - Through strengthening the authentication concepts utilizing the Biometric-Fingerprint Matching System, the key purpose of this strategy is to improve the protection features of identity management and security realms. Many Fingerprint matching systems are available in previous approaches to provide the answer for authentication principles, but all are at any degree of possibility, nobody can guarantee that the applied system is entirely qualified for authentication requirements. This sort of variance is induced by many factors, such as fingerprint distortions, adjustments of the vein form, thinner ridges, and so on. The proven realistic methods are capable of delivering solutions focused on each of the above-mentioned issues to produce the best outcomes, but a new technique is needed to solve the all-mentioned problems and ensure that our proposed approach is entirely qualified to execute the authentication operations based on Biometric-Fingerprint more effectively compared to other frameworks. The suggested methodology is focused on the study of three specific level features present in all Finger-Print cores, such as world, neighborhood and local features, in which the proposed algorithm will execute an effective matching scheme and the current approach is referred to as the Multilevel Structural Fingerprint Bank Technique (MSFPBT). The MSFPBT analyses the first two levels of characteristics focused on the location and ridge inclination of an area with respect to the center and its neighboring areas, respectively, where the local characteristics of curvature and minutiae of its ridges of the region are represented as finished. At the point of measurement, the next stage of local characteristics is dynamically evaluated and generates the outcome dependent on the cumulative outcome of the three characteristics analyzed. The proposed MSFPBT algorithm also recognizes distorted/affected fingerprints for processing, which identifies and corrects skin distortion based on local and global feature cores based on an input test image. The experimental findings indicate that the current Biometric method is ideal for more accurately recognizing fingerprints and reducing the false schema.

Keywords: Multilevel Structural Fingerprint Bank Methodology, MSFPBT, Mixing, Orientation, Local and Global Characteristics of Biometric-Fingerprint.

INTRODUCTION

While systematic developments in Fingerprint Recognition have advanced rapidly in the last 40 years, there are still a few study problems for testing, for illustration, perceiving low-quality fingerprints [1] [2]. As sensed in the FVC2006[2][3][4], Fingerprint matcher is

highly vulnerable to image/image consistency, where the coordinating/matching performance of the same measurement fluctuates basically across multiple databases owing to the variation of image/image quality. As seen in NIST-directed creativity tests, the gap between the accuracy of plain, twisted and dormant Fingerprintcoordination/matching is considerably greater [4]. The effect of low-quality fingerprints depends on the Fingerprint Recognition framework sort. It is necessary to assign either a positive or false paradigm to a special finger sensation recognition framework. For egg, in a positive awareness system, physical access control frameworks, the assembled consumer is helpful and wants to be remembered.

For egg, identifying persons in watch lists and separating multiple enlistments under different names in a fake identification system, the client of suspense gathered is uncooperative, however, does not want to be identified. Low quality would cause phony dismissal of authentic customers in a constructive acknowledgement framework and therefore add burden. Nevertheless, the effect of low quality for a false recognition system is significantly more genuine, as malignant customers can deliberately reduce specific finger impression quality to overcome the genuine character of the unique finger impression framework [4][6]. To be known, law authorization agencies have encountered numerous incidents in which suspects tried to prevent identifiable evidence by damaging their fingerprints or then precisely changing them again [7][8][9]. It is therefore especially necessary for false Fingerprint recognition frameworks to detect low-quality fingerprints and increase their output with the objective that malicious customers may not challenge the specific finger impression structure.

EXPERIMENTAL STUDY OF USER REVOCAION AND DYNAMIC OPERATIONS OVER CLOUD SERVER

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ABSTRACT: *-We would recognize problems in the Cloud-based protection environment and will offer strategies for understanding the current research work on different access management frameworks and the expanded HCP-ABE architecture consists of four Data Owner (DO), Data Consumer (DU), Cloud Service Provider and Attribute Authority (AA), Data Owner outsource sensate. This paper offers potential alternatives for secrecy, honesty, effective user revocation and complex cloud storage operations. The experimental findings indicate a 15% reduction in the sophistication of the schema and the inputs to this study are special and considered to be expanded approaches to enhance data protection and to facilitate effective user revocation and interactive data operations.*

Keywords: *HCP-ABE, CP-ABE, ACP Access Check Regulation.*

instead of purchasing, installing and running its own systems. Cloud computing main industry players such as Google, Amazon and Microsoft etc., these vendors develop innovative company and organizational structures that permit consumers to compensate for their whole services, not make massive upfront expenditures. Cloud computing is a paradigm where resources or services (infrastructure, platform, software and databases) supplied over the web can be accessed as a service wherever, and when you are in need of, computing power in the field of computing infrastructure, application and business processes. Because of its versatility and resources, many people move to the cloud in four way, individually, publicly, hybrid and in group clouds to avoid local pressures until data is outsourced to the cloud to every consumer, however due to protection concerns outsourced data must be secured until being put in the cloud. Much of the recent literature centered on key management problems and rigid access protocols, but the Access Control mechanism can design constructive solutions because of the usage complexities. Help for dynamic access control and operations the policy-attribute-based encoding homographic cipher text (HCP-ABE) scheme is planned. The HCP-ABE includes five basic algorithms, each of which has the specific functionality of configuring, key generation, encryption, decryption and update encryption, firstly public key (PK) and master key (MK) as implicit

I. INTRODUCTION

Cloud compute ring is an increasing paradigm in which computational capabilities available on the Internet as elastic, on-demand (Web) platforms become more persistent in everyday livelihood. An association that utilizes internet resources has to use huge quantities of capital for technology to support viable customers, not an issue for major enterprises but in the affordability of small to medium-sized firms or companies the enormous system has a number of challenges, such as computer breakdown, hard drive sounds, program glitches etc. For such a group, this may be a huge concern. The ultimate solution to this problem is cloud computing. An organization can rely on a cloud provider to do this

FAKE JOB RECRUITMENT DETECTION USING MACHINE LEARNING

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ABSTRACT

It is proposed in this research that a computerised apparatus that makes use of artificial intelligence-based organising strategies in order to avoid deceptive job postings on the internet be developed. Various classifiers are used to check for misleading information on the internet, and the findings of those classifiers are analysed in order to develop the most effective business trick detection model that can be used in the field of information security. When searching for fake job advertisements amid a large number of legitimate job ads, this tool may be really helpful. Solitary classifiers and troupe classifiers, to name a few examples, are two important types of classifiers that are used in the process of spotting bogus job postings on the internet. In any event, the results of the trials demonstrate that aggregating classifiers outperform solo classifiers when it comes to detecting tricks in general.

1. INTRODUCTION

The usage of the "work trick" has become a new development in the area of Online Enrollment Fraud, and it has been highlighted as one of the most serious concerns that needs to be addressed (ORF). In recent years, job postings on the internet have grown in popularity, as job searchers have gotten more skilled at locating available positions on the internet. Extortionists, on the other hand, may take advantage of this notion in order to get money from job searchers, since they supply labour services in return for money to individuals who are looking for work prospects. In the case of an assumed organisation, for example, phoney occupation notifications may be transmitted as a consequence of the assumed organisation neglecting to pay attention to whether or

not the occupation notifications they are issuing are legitimate in the first place. The development of a robotized system to identify false occupation post recognitions and to alert people to the existence of such bogus occupation post recognitions has piqued the interest of some, with the goal of discouraging people from applying for jobs as a result of these phoney job advertisements. In order to identify fake posts, it is required to use an artificial intelligence approach, which makes use of a variety of characterization calculations to do this. As a result of this differentiation, consumers are alerted to the existence of fake occupation announcements, which are differentiated from the rest of the occupation announcements by use of an identifying device. Controlled learning calculation and arrangement processes are initially investigated as potential solutions to the challenge of distinguishing between bogus job advertising and legitimate job advertisements. A classifier divides a variable into target groups based on the attributes of the variable, while also taking into account the process of information production as an input to the classification process. This section of the article provides an overview of the classifiers that are used in the article to differentiate between counterfeit occupation advertising and the rest of the job ads that are available on the internet. Single Classifier-Based Prediction and Ensemble Classifier-Based Prediction are two types of predictions that may be produced using classifiers, as specified by the Statistical Learning Theory. Single Classifier-Based Prediction is a kind of prediction that can be made using a single classifier (SLT).

FBI CRIME DATA ANALYSIS USING MACHINE LEARNING

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ABSTRACT

Crime is one of the biggest and dominating problem in our society and its prevention is an important task. Daily there are huge numbers of crimes committed frequently. This requires keeping track of all the crimes and maintaining a database for same which may be used for future reference. The current problem faced are maintaining of proper dataset of crime and analyzing this data to help in predicting and solving crimes in future. The objective of this project is to analyze dataset which consist of numerous crimes and predicting the type of crime which may happen in future depending upon various conditions. In this project, we will be using the technique of machine learning and data science for crime prediction of Chicago crime data set. For this supervised classification problem, Decision Tree, Gaussian Naive Bayes, k-NN, Logistic Regression. This approach involves predicting crimes classifying, pattern detection and visualization with effective tools and technologies. Use of past crime data trends helps us to correlate factors which might help understanding the future scope of crimes. In this work, various visualizing techniques and machine learning algorithms are adopted for predicting the crime distribution over an area. In the first step, the raw datasets were processed and visualized based on the need.

Keywords: crime analysis, prediction analysis, machine learning, decision trees, pattern detection.

INTRODUCTION

1.1 Introduction Of FBI Crime Data Analysis

Crimes are the significant threat to the humankind. There are many crimes that happens regular interval of time. Perhaps it is increasing and spreading at a fast and vast rate. Crimes happen from small village, town to big cities. Crimes are of different type – robbery, murder, rape, assault, battery, false imprisonment, kidnapping, homicide. Since crimes are increasing there is a need to solve the cases in a much faster way. The crime activities have been increased at a faster rate and it is the responsibility of police department to control and reduce the crime activities. Crime prediction and criminal identification

are the major problems to the police department as there are tremendous amount of crime data that exist. There is a need of technology through which the case solving could be faster. The objective would be to train a model for prediction. The training would be done using the training data set which will be validated using the test dataset. Building the model will be done using better algorithm depending upon the accuracy. The K-Nearest Neighbor (KNN) classification and other algorithm will be used for crime prediction. Visualization of dataset is done to analyze the crimes which may have occurred in the country.

This work helps the law enforcement agencies to predict and detect crimes in Chicago with improved accuracy and thus reduces the crime rate. There has been tremendous increase in machine learning algorithms that have made crime prediction feasible based on past data. The aim of this project is to perform analysis and prediction of crimes in states using machine learning models. It focuses on creating a model that can help to detect the number of crimes by its type in a particular state. In this project various machine learning models like K-NN, boosted decision trees will be used to predict crimes. Area Wise geographical analysis can be done to understand the pattern of crimes. Various visualization techniques and plots are used which can help law enforcement agencies to detect and predict crimes with higher accuracy. This will indirectly help reduce the rates of crimes and can help to improve securities in such required areas. Crimes can be predicted as the criminals are active and operate in their comfort zones. Once successful they try to replicate the crime under similar circumstances.

1.2 INTRODUCTION TO DOMAIN

Machine learning (ML)



INTERNET OF THINGS BASED CYBER RISK IMPACT ASSESSMENT PRINCIPLES

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Abstract:

In virtual IoT technologies present new cyber hazard in the supply chain of the digital financial gadget which may be frequently no longer seen to agencies taking factor within the digital supply chains. This paper discusses how the IoT cyber risks may be visualised within the approach of designing enterprise company and supply chain strategies. The literature reviewed consists of company and authorities papers and compares established business and deliver chain fashions with studies on new IoT generation this text defines the layout parameters for an expansion useful resource device for visualising cyber chance from IoT supply chain in the digital financial gadget. The layout approach is grounded on a case study on IoT organizations. The strategies finished in the case study encompass open and precise coding and discourse evaluation.

Keywords: internet-of-things, cyber risk, supply chain strategy, digital technologies, decision support system.

1 Introduction

The digital supply chains expose new types of cyber risk in the digital economy from shared infrastructure. The impact of Internet of Things (IoT) technologies on supply chain cyber risk has rarely been discussed in academic literature. The visibility of cyber risk is especially neglected in the context of IoT digital technology and digital capabilities in small and medium enterprises (SME's) supply chains in the digital economy. The integration of IoT digital technology in supply chains require standardisation reference architecture for managing complexities and resources efficiently. But the digital economy at present lack clarification on individual levels of the strategic, functional and operational challenges from IoT digital technologies in the supply chain.

2 The Methodology

The research methods applied to build the decision support system include literature review and case study and the data is synthesised using the grounded theory approach 1, using qualitative primary and secondary resources and categorising emergent concepts into themes. The diversity of the case study participants represented in the sample population is analysed with reference to the 'Industry Classification Benchmark' 2, to

determine the industry representativeness and to eliminate industry bias 3. This approach has been applied previously in peer-reviewed literature 4– 7. The process of ensuring validity of the findings, applied qualitative research techniques 8–10. Open and categorical coding is applied to analyse and categorise the qualitative data. This represents a time-tested complimenting method for grounded theory 11. Open coding provides a reliable representation of the data collected, while categorical coding subsequently recognises the profounder concepts in the data 12. Discourse analysis is applied to evaluate and interpret the connotation behind the explicitly stated approaches 10, along with tables of evidence 13 and conceptual diagrams 14 to present graphical analysis.

3 Literature Review

In the literature reviewed, there is no clear-cut nor mutually exclusive viewpoint on IoT supply chains and the visibility of cyber risk 15. We have a juxtaposition of supply chain models 16 and IoT digital technologies 17. Represented as two research areas being placed close together with contrasting effect 18. From a technical point of view, the review does not address the related areas of vertical and horizontal integration, smart supply chains, and supply chain visibility. That would

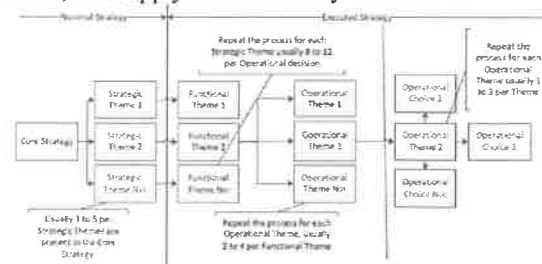


Figure 1: Framework synthesising the findings related to designing supply chain model with IoT technologies in the digital economy

The framework in Figure 1 differentiates from previous models as it enables investigating the supply chain actual capabilities which are analysed through the digital operational activities. The framework represents a generic design and does not represent specific supply chain objectives. Instead, it presents the scaffolding for the required operational activities. The scaffolding enables the design process to populate the categories and



OSEK-V: APPLICATION-SPECIFIC RTOS INSTANTIATION IN HARDWARE

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ABSTRACT

The employment of a real-time operating system (RTOS) in embedded control systems is often an all-or-nothing decision: While the RTOS-abstractions provide for easier software composition and development, the price in terms of event latencies and memory costs are high. Especially in HW/SW co-design settings, system developers try to avoid the employment of a full-blown RTOS as far as possible. In OSEK-V, we mitigate this trade by a very aggressive tailoring of the concrete RTOS instance into the hardware. Instead of implementing generic OS components as custom hardware devices, we capture the actually possible application–kernel interactions as a finite-state machine and integrate the tailored RTOS semantics directly into the processor pipeline. In our experimental results with an OSEK-based implementation of a quad rotor right controller into the Rocket/RISC-V soft core, we thereby can significantly reduce event latencies, interrupt lock times, and memory footprint at moderate costs in terms of FPGA resources.

KEYWORDS

Application special processor design, hardware-assisted real-time scheduling, OSEK

1 INTRODUCTION

This paper addresses the hardware–operating-system boundary in embedded control systems. Our modern lives are driven by these special-purpose systems [30]: We can already more than a hundred of them in our car [5], dozens of them in our household appliances, and trends like the Internet of Things (IoT) will further increase their role for everyday life. Embedded control systems typically have to full dedicated, pre-denied task in a cyber-physical context, often under the consideration of strong safety and timing requirements. As they are employed in goods of mass production (such as cars), the per-unit

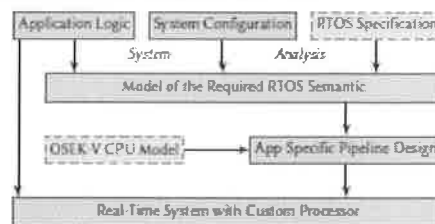


Figure 1: The OSEK-V Approach with Application-Specific (blue) and Generic (green, dashed) Fragments

cost pressure is high. Hence – if at all – a compile-time tailor able real-time operating system (RTOS) is employed as system software, but in many cases developers try to avoid the costs of even a small RTOS kernel. Compared to bare-metal software or even discrete hardware, solutions using an RTOS are typically less analyzable/ predictable and induce much higher event latencies and memory costs. On the other hand, the abstractions by the RTOS (e.g., prioritized threads, alarms, resources) significantly ease the development of more complex and composable control applications. However, even in cases of HW/SW codesign, we often see an all-or-nothing approach: Engineers either avoid employment of RTOS abstractions (which complicates software development) or instantiate a complete RTOS as a (costly) standard software component. In this paper, we resolve the all-or-nothing gap in HW/SW co-design settings by combining the best of both worlds: The idea is to keep the RTOS interface for easy and composable application development, but aggressively tailor its actual implementation to the very specific usage pattern of the concrete application directly into the hardware.

The idea to push the operating system (or parts thereof) into (custom) hardware to improve on event latencies is a long-established of research (e.g., [6, 3, 21, 24, 15, 11]). In contrast to such previous work, we perform a much tighter tailoring of the OS and hardware based on our whole-system approach: Instead of instantiating dedicated components (such as the scheduler) as an additional hardware device besides the CPU, we integrate the RTOS semantics directly into the CPU pipeline. Effectively, the concrete RTOS interaction model (actually used syscalls and their call-site context) becomes an efficient and application-tailored extension of the processor’s instruction set and register files. This direct processor integration avoids the costs of a full-blown RTOS, but exposes properties that are hard to achieve software-only on modern architectures: Perfectly



IJARST

International Journal For Advanced Research In Science & Technology

A 1357 indexed international journal

www.ijarst.in

ISSN: 2457-0362

A 135-frames/s 1080p 87.5-mW Binary-Descriptor-Based Image Feature Extraction Accelerator

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Abstract— Binary picture descriptors, which derive image function description from the neighborhood photograph patches at once, are widely followed in the cellular and embedded applications due to lower computational complexity and memory requirement. With the purpose of improving the computation efficiency without degrading reputation overall performance, a light-weight binary robust descriptor is proposed based totally on the evaluation of the country-of-the artwork binary descriptors in this paper. A directional aspect detection and optimized keypoint score characteristic are developed to refine the keypoints. Similarly, rotation invariance is accomplished by executing circular symmetric-based descriptor era and a rough-grained orientation calculation technique simultaneously. Their experimental results reveal that the proposed keypoint detector and binary descriptor reap more than instances speedup and at least 23.6% development in processing pace with similar performance, respectively. Moreover, a completely huge scale integration structure is likewise designed based on in-depth exploration of bit-level and task-degree parallelism. Based totally at the postlayout simulation in a TSMC sixty five-nm CMOS process, the accelerator can obtain one hundred thirty five frames/s on 1080p photo at the same time as best eating 87.5 mW at a 200 MHz running frequency.

Index Terms—Binary descriptor, feature extraction, key point detector, rotation invariance (RI).

I. INTRODUCTION

With the deployment of high-quality image sensor on the embedded platforms (wearable devices, smart mobile devices, mobile robots, unmanned aerial vehicles, etc.), a set of visual applications, such as face recognition, augmented reality, visual tracking, and 3D reconstruction, is realized on these platforms. As one of the most computational intensive functions to support these visual applications, feature extraction, including keypoint detection and descriptor generation, aims to obtain distinctive and robust image representations. The resulted representations are used for further matching across different images, which suffer from certain variations in scale, brightness, viewpoints, and rotation. Traditional histogram-of-gradients-based descriptors, such as scale-invariant feature transform (SIFT) [1] and speeded up robust features (SURF) [2], can provide the best recognition performance while keeping invariant to scaling, rotation, and illumination problems. However, they are too computationally expensive and pose a huge burden to memory access and storage. Although several methods, such as integral image, dimension reduction, and locality sensitive hashing, are applied in the later variants, such as principle component analysis SIFT [3] and gradient location and orientation histogram [4], these algorithms are



IJARST

International Journal For Advanced Research In Science & Technology

A peer-reviewed international journal

ISSN: 2457-0362

www.ijarst.in

VITRAIL: Acquisition, Modeling, and Rendering of Stained Glass

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Abstract— Stained glass windows are designed to reveal their powerful artistry below diverse and time-various lighting conditions; virtual relighting of stained glass, therefore, represents an great device for the appreciation of this age old art shape. however, instead of maximum other artifacts, stained glass home windows are extraordinarily hard if now not impossible to analyze using controlled illumination because of their length and position. on this paper, we present novel strategies built upon image based priors to carry out digital relighting of stained glass art work by acquiring the real light transport properties of a given artifact. In a preprocessing step, we construct a fabric-dependent dictionary for mild delivery by studying the scattering properties of glass samples in a laboratory setup. we can now use the dictionary to get better a light shipping matrix in two ways: below controlled illuminations the dictionary constitutes sparsifying foundation for a compressive sensing acquisition, while in the case of uncontrolled illuminations the dictionary is used to perform sparse regularization. The proposed basis preserves volume impurities and we show that the retrieved light transport matrix is heterogeneous, as in the case of actual international items. We gift the rendering results of numerous stained glass artifacts, inclusive of the Rose Window of the Cathedral of Lausanne ,digitized the usage of the provided methods.

Index Terms—Banded matrices, computational relighting, cultural artifacts, dictionary learning, light transport, sparse recovery, stained glass.

I. INTRODUCTION

STAINED glass is an artistic medium that exploits the scattering properties of colored, translucent glass panes. Stained glass artifacts, which have a millenary tradition, have been (and still are) produced in a surprising variety of forms and techniques but clearly the quintessential examples of stained glass artistry are to be found in medieval buildings such as the Chartres or Canterbury cathedrals or the Sainte-Chapelle. Remarkably, the windows that have survived to our times have done so extremely well and they represent the most chromatically accurate testimony of medieval art available to us. However, much like the architectural structures that they are part of, stained glass windows cannot be moved and their detailed observation is often made difficult by their size and placement; ideally, a high-quality acquisition and rendering toolkit would allow scholars and art lovers to interact with this art form in ways that are simply not possible using direct observation.

Unfortunately, stained glass artwork “resists” many digitization approaches in a number of ways. One well-known difficulty is its high dynamic range, a quality amplified by the contrast between the dimly lit interior of a cathedral and the backlit imagery on the windows. But even before we take dynamic range into account, we need to address the fact that stained glass is an eminently non-static medium, designed to be experienced across the many different



FPGA Architecture for High-Speed Network Feature Extraction of Designing Analysis

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Abstract

System include extraction includes the capacity and characterization of system parcel action. Albeit fundamentally utilized in organize interruption discovery frameworks, include extraction is likewise used to decide different angles of a system's conduct, for example, all out traf and normal association size. Current programming techniques utilized for extraction of system highlights neglect to meet the exhibition necessities of cutting edge fast systems. Right now paper, we propose a FPGA-based reconfigurable engineering for highlight extraction of enormous fast systems. Our structure utilizes equal lines of hash capacities and sketch tables so as to process arrange bundles at a high throughput. We present a definite portrayal of our engineering and its execution on a Xilinx Virtex-II Pro FPGA board, and give cycle-precise planning results to highlight extraction of information organizing benchmark information. Our outcomes exhibit certifiable throughputs of as high as 3.32 Gbps, with speedups arriving at 18 x when contrasted with a comparable programming execution.

1 Introduction

The goal of a Network Intrusion Detection System (NIDS) is to detect attacks on any machine within the local network by monitoring the network activity. In general, there are two different approaches taken when protecting networks using intrusion detection-based systems. The first approach, known as signature detection, searches for predetermined attack patterns in the network activity. The second approach, known as anomaly detection, looks for any sort of abnormal activity in the network flow, and then determines if the abnormal behavior is an attack. Signature detection-based methods are unable to detect new kinds of attacks, as well as those attacks that vary significantly from . This observation has motivated a deeper study of anomaly-based NIDS mechanisms.

Anomaly detection typically involves two separate stages. In the first step, network features stored in

packet headers are extracted and stored over an interval of time. In the second step, a change detection and classification algorithm

is applied to this stored information in order to detect attacks. In large-scale high-speed networks, this first step in anomaly detection is the most crucial. An efficient NIDS must be able to store and classify network features without compromising on speed or loss of information. Considering the increasing size and speed of modern networks, general-purpose processors do not meet the requirements of the next generation of NIDSs. This has motivated researchers to explore the possibility of using dedicated hardware for anomaly detection systems in general [2, 3, 15] and feature extraction/classification in particular [10, 16]. Besides its use in anomaly detection, feature extraction is key to several other applications such as data mining [1], speech recognition [12], and image processing [11], among others. However, due to the clear needs of performance, we concentrate on using feature extraction for anomaly detection only. Particularly, we propose a reconfigurable architecture for feature extraction of high-speed networks, and implement this design using FPGAs. By making use of the inherent parallelism of FPGA hardware, we are able to speed up our application by a considerable amount as compared to an equivalent software implementation. Our architecture is pipelined to achieve a high throughput, making it suitable for application in multi-gigabit networks.

We also make use of feature sketches to store network activity, thus minimizing the required memory resources. Our results show that the architecture is several times faster than the equivalent software implementation and offers a practical solution for feature extraction of high-speed networks.

The remainder of this paper is organized as follows. Section 2 provides a brief overview of some of the main concepts behind network intrusion detection. Section 3 motivates the need for hardware implementation of the feature extraction process. In Section 4, we describe our Feature Extraction Module (FEM) architecture and its various



IJARST

International Journal For Advanced Research In Science & Technology

A peer reviewed international journal

www.ijarst.in

ISSN: 2457-0362

High Performance VLSI Architecture for 3-D Discrete Wavelet Transform

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Abstract—This paper presents a high-speed memory efficient VLSI architecture for three dimensional (3-D) discrete wavelet transform. A major strength of the proposed architecture lies in reducing the number and period of clock cycles for the computation of wavelet transform. This five stage pipelined architecture shares the partial load of the next stage with the present stage to reduce computational load at the next stage and critical path delay (CPD). The proposed architecture has replaced the multiplications by optimized shift and add operations to reduce the CPD. Implementation results show that the proposed architecture benefits from the features of reduced memory, low power consumption, low latency, and high throughput over several existing designs. **Index Terms**—3-D DWT, lifting based DWT, VLSI Architecture, flipping structure.

1. INTRODUCTION

Video compression is a major requirement in many applications including medical imaging, studio applications and broadcasting applications. Compression ratio of a video encoder depends on the underlying compression algorithms. The goal of any compression technique is to reduce the immense amount of visual information to a manageable size, so that it can be efficiently stored, transmitted, and displayed. It may be noted that 3-D DWT enables compression in spatial as well as temporal direction, which is very desirable for video compression. Moreover, wavelet based compression provides the scalability with the levels of decomposition. From the last two decades, several hardware designs have been noted for implementation of 2-D DWT and 3-D DWT for different applications. Majority of the designs are developed based on convolution and lifting procedures. Most of the existing architectures involve large memory requirement, low throughput, and complex control circuit. Convolution based implementations [1]-[3] provide the outputs within less time but would require high amount of arithmetic resources. Moreover, it is memory intensive and would occupy large area for implementation. Lifting based [4] implementations require less memory, less computational complexity and possibility to implement in parallel. However, it will require long critical path, and recently more number of contributions are reported to reduce the critical path in lifting based implementations. Several lifting based 3-D DWT architectures are noted in the literature [5]-[11] to reduce the critical path of the 1-D DWT architecture and to decrease the memory requirement of the 3-D architecture. Among the best existing designs of 3-D DWT, Darji et al. [11] produced best results by reducing the memory requirements and gives the throughput of 4 results/cycle. Still it requires the large on-chip memory ($4N^2 + 10N$). In this paper, we propose a high-speed and memory efficient lifting based 3-D DWT architecture, which requires only $2 * (3N + 30P) + 24$ words of on-chip memory and produces 8 results/cycle and reduced the critical path delay to $2T_a$. The proposed 3-D DWT architecture is built with two spatial 2-D DWT (CDF 9/7) processors and four temporal 1-D DWT (Haar) processors. To eliminate the temporal memory and to reduce the latency, Haar wavelet is incorporated in the temporal processor. The resultant architecture has succeeded in reducing the latency, on chip memory and enhance the speed of operation compared to existing 3-D DWT designs. Organization of rest of the paper is as follows. Detailed description of the proposed architecture for 3-D DWT is provided in section II. Results and performance comparisons are given in Section III. Finally, concluding remarks are given in Section IV.

II. PROPOSED ARCHITECTURE FOR 3-D DWT

The proposed architecture for 3-D DWT consisting of two parallel spatial processors (2-D DWT) and four temporal processors (1-D DWT), is depicted in Fig. 1. After applying 2-D DWT on two consecutive frames, each spatial processor (SP) produces 4 sub-bands, viz. LL, HL, LH and HH which are fed to the inputs of four temporal processors (TPs) to perform the temporal transform. Output of these TPs consist of a low frequency frame (L-frame) and a high frequency frame (Hframe). A. Architecture for Spatial Processor In this section, we propose a new high-speed memory efficient lifting based 2-D DWT architecture denoted by spatial processor (SP). It consists of row and

Design and Implementation of Automated Residential Water Heating System using Sustainable Energy and PLC Techniques

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inputs and the same number of outputs Elements H1 and H2 of an electric heating system may only be

Abstract:

The study's goal is to design a control system that uses solar energy as a renewable and free energy source and water from wells to provide water and hot water around the clock to people residing in residential areas during difficult times and abnormal conditions. Research on this project was conducted during the devastating The electricity crisis in Mosul, Iraq, in the winter of 2014 was characterized by low temperatures (the city only received power for about two hours out of every seventy-two), a lack of other energy sources (oil, cooking gas, gasoline essentially disappeared), and the suspension of water delivery by the government's water purification plant. The most practical approach was to utilize solar water heating and individual generators (the Zone Generators, ZG) that serve multiple homes (3 h ON/3 h OFF) in the area. This system consists of 1) the primary electric water heater, 2) auxiliary electric water heaters, and 3) a programmable logic controller (PLC) from SIEMENS of Germany (LOGO!@ V7.0). The 30 L emergency electric water heater is a backup system. The solar heater uses two flat panels to gather solar heat and a heat storage tank (Capacity 180 L). Valves for electrical regulation (12 VDC coil voltage).

INTRODUCTION

The key components of the control method are shown in Figure 1 below. Electricity may be drawn from either the National Electricity Act (NEA) or a generator through an automated transfer switch. To a ZG based on what is readily available. The programmable logic controller (PLC; Siemens, 2013; PT., 1989; Rashid, 2011; Hugh, 2010) has the following technical specifications: DC/DC/relay \sac Inputs: 8 digital or 6 digital Plus 2 analog C Inputs for 4 Relays C An add-on board having eight digital

used when NEA is available. Supplying DC loads like the PLC, analog thermostat, solenoid valves, and H3 and H4 actuators with power is the backup battery charging system. The PLC has a number of outputs (Operating Voltages: 12 VDC) that it uses to power things like the solenoid Valves (V1-V6) (Va and Vb) and the actuators of the Electrical heater elements (H3 and H4). C the PLC receives data from a single analog temperature sensor (thermostat) (PT., 1989). C It is necessary to have a single analog thermometer of monitoring the hot water supply's final temperature before it leaves the unit. C In the case that neither NEA nor ZG are available, the system can be kept operational by charging its backup battery with the help of a photovoltaic solar cell (Thabet, 2014) (PV) (Current 2A, Voltage 12 V, safety factor 1.25).

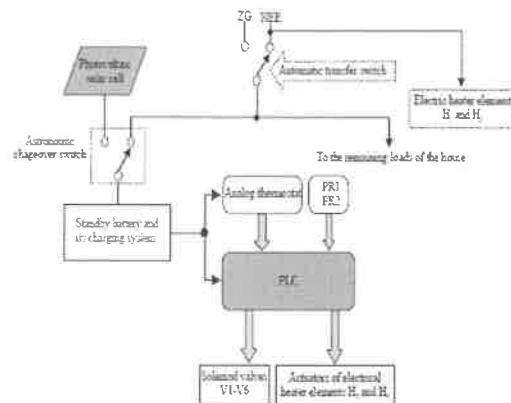


Fig. 1: Main parts of the electric scheme

MATERIALS AND METHODS

Hardware task

Installation works:

Development of Switched Capacitor based Single Phase Multilevel Inverter for Isolated Applications

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ABSTRACT

This work introduces a pulse width modulated (PWM) control approach for a single-phase, nine-level inverter suitable for use in stand-alone photovoltaic systems. To create the nine-level inverter, a single-phase conventional H-bridge inverter, three bidirectional switches, and four capacitor voltage dividers are suggested. The regulator signal is constructed from four reference signals with sinusoidal amplitudes that are as compared to a single triangle carrier signal used to regulate the inverter's switching. The inverter can produce nine different levels of output voltage, each of which is a more fundamental RMS output voltage with a less degree of THD. Results from a MATLAB simulation have validated the nine-level inverter that was suggested.

INTRODUCTION

Researchers in the area of power electronics are increasingly focused on renewable energy sources in response to rising energy demand and the fast depletion of non-renewable resources. Predictions indicate that the renewable energy source will provide us with useful energy for almost a millennium. And the renewable energy sources would lower operational expenditures and emissions from fossil fuel consumption, therefore improving environmental conditions. One of the most common methods of producing electricity from sunlight, photovoltaic systems are becoming more widespread. Photovoltaic systems may be utilized for standalone purposes and feed their output into the grid. Multilevel inverters are an advanced take on the traditional two-level inverter. The purpose of a single-phase inverter, whose basic design consists of four switches, is to produce a sinusoidal voltage from a variety of voltages, often those stored in capacitors.

The primary advantage of this kind of inverter over a single switch with a higher VA rating is that current may be shared across numerous switches. In every other case, harmonics are permitted. The synthesized output waveform, which looks like a staircase, gets closer to the ideal waveform with diminishing harmonic distortion as the level count goes up. Companies that provide high-power inverter systems have reported many distinct multilevel inverter topologies. Diode clamped, flying capacitor or multicell, cascaded H-bridge, and modified H-bridge multilevel inverter topologies are some of the most popular. The output from each of these three topologies is generated by a unique method. Clamping diodes and a series-connected capacitor are employed in the diode-clamped multilevel inverter, whereas floating capacitors and a series connection of H-bridges make up the cascaded kind. This diode-clamped multilayer inverter works by applying varying voltages across the inverter's various phases and, in turn, to the series-connected capacitor banks. Because of the low voltage it can transmit, diodes are often used to protect more sensitive electronic equipment. Diode clamped multilevel inverters have the disadvantage of being difficult to maintain, as the charging and discharging cycle becomes more taxing as the number of levels increases (as the number of diodes required increases quadratically). Adding more switches, diodes, and capacitors should solve the problem. Because of problems with balancing the capacitors, they can only be used on levels 1, 2, and 3. When using a power supply of the flying capacitor type, flying capacitors must be used in place of clamping diodes. Since flying capacitor multilevel inverters require switching redundancy within phase to balance the flying capacitors, their output is only half of the input dc voltage. Each H-bridge cell in the cascaded H-bridge multilevel inverter can generate a voltage of zero, a positive dc voltage, or a negative dc voltage. Compared to diode clamped and flying capacitor topologies, this one uses fewer parts. Each

Dim Wolf analyzer method for two-terminal HVDC frameworks ideal power stream¹Mr. B.Raju Assistant Professor, banothu.raju12@gmail.com²Mr. B.Raju Assistant Professor, banothu.raju12@gmail.com³Mr. D.Mallesham Assistant Professor, malleshamkuruma@gmail.com⁴Mr. N.Mahesh Assistant Professor

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Abstract. Using published findings from other optimization approaches, the suggested algorithm's reliability is proved. It has been shown that compared to other optimization strategies, the GWO algorithm may achieve significantly reduced CPU time and total cost. The GWO algorithm is proven to be effective by this conclusion. As compared to GA, BSA, ABC, and NRM with quicker convergence, GWO had lower overall costs and CPU time. There are OPF equality and inequality restrictions in pure AC power systems. Integrated AC-DC power systems is addressed using a mechanism known as GWO, which includes HVDC connections and regulates power transmission. Design and behavior of this algorithm was inspired by wild grey wolves. The proposed technique is tested using a WSCC 9-bus test system and modified 5-bus and.

1. Introduction

AC electricity is converted to DC by an inverter station in a transmission system for high-voltage direct current (HVDC) power. Electrical power that has been sent is converted back to AC by a rectifier once it is received. In a back-to-back HVDC system, the converters are connected in series, whereas in a long-distance transmission line or an un-derground cable, the converters are connected in parallel. It is optimal to use HVDC systems as a supplement to current AC power systems. Utilizing HVDC systems has a number of advantages, including the ability to transmit electrical power over long distances in an environmentally friendly and efficient manner, the ability to connect networks that operate at different frequencies, the ability to control the direction of power flow, and the ability to access onshore and offshore renewable energy generation sources [2].

The first commercial application of HVDC transmission between the Swedish mainland and Gotland was said in literature to have happened in 1954, when mercury-arc valves were in use. When it comes to AC power systems, OPF is defined by equations that are neither linear nor convex. Preliminary characteristics of the intended system alterations need to be determined via feasibility studies... More in-depth investigations are required to take into account data from power flow and other parameters. To ensure that the HVDC plant is effectively integrated into the electrical grid, operational studies are required [4]. OPF is less complicated but still nonlinear if reactive power is not utilised. Nonlinear equations may be solved using a variety of techniques.

Automation of two-area power systems using PI controllers was used in 2010 to deal with economic emission dispatch problems [8, 9]. For smart grids, GWO has been utilized in recent years to predict the parameters of the PI controller to avoid blackouts. [2 and 3] The

HILL CLIMBING MPPT BASED FAULT RIDE THROUGH CONTROL SYSTEM FOR A WECS WITH DFIG

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Abstract: This paper deals with the Hill climbing MPPT based fault ride-through capability assessment for doubly-fed induction generator-based wind. The most used techniques for MPPT, are the Hill Climbing Techniques. These include Perturb & Observe method and Incremental Conductance. This paper presented an improved fault-ride through (FRT) system for a wind turbine with doubly fed induction generator (DFIG) that is based on the proper HC-MPPT control to address symmetrical as well as unsymmetrical and unbalanced grid voltage sags. This is accomplished by adopting a properly modified topology of the wind energy conversion system (WECS) with DFIG that provides the ability to regulate the stator voltage through the system of the rotor power converters. Therefore, significant improvement of the FRT capability is attained, since any oscillations of both the stator and rotor currents that may be caused by the voltage dip can be considerably reduced and they can remain within predefined safety limits. The implementation of the new topology as well as the corresponding control system are cost effective, since no additional hardware is required, and it is accomplished by the reconfiguration of the existing topology. Simulation results obtained by a high and low scale WECS with DFIG, respectively, are presented to validate the effectiveness of the proposed HC-MPPT and FRT control method and demonstrate the operational improvements

Keywords: Wind Energy Conversion System (WECS), Doubly Fed Induction Generator (DFIG), Hill Climbing (HC) MPPT, Fault Ride Through (FRT)

I.INTRODUCTION

For wind power to take off, however, turbines will need to be built that can both generate power and feed it back into the grid through FRT. Whether or not things return to normal once a voltage drop has been remedied relies on the system's capacity to maintain a steady energy output and avoid excessive current oscillations. However, if a sizable percentage of wind power suddenly ceased

operating, it might do major harm to the network [2]. The wind system is very vulnerable to grid disruptions since the stator windings of a DFIG are directly linked to the grid and the rotor side conversion mechanism controls just a portion of the power produced. Given the need of maintaining system function in the face of symmetric and asymmetric network disruptions, the capacity of DFIGs in WECS to perform FRT is of highest value. Large overvoltage and overcurrent transients occur in a DFIG when the rotor moves because the magnetic flux does not immediately adjust to the fast change in stator voltage. A negative sequence component in the stator voltage and a high slip frequency are the results of an asymmetrical breakdown, and they may induce potentially lethal overvoltage and overcurrent oscillations. Several studies have examined the FRT issue in a WECS with DFIG, and the solutions given may be broken down into two groups: hardware interventions and control changes. Most FRT methods include physically restricting the rotor winding connections with a crowbar to protect the rotor side power converters from voltage and current transients [5, 6]. A short circuit is created in the rotor winding due to the resistance of the crowbar. Due to this, the DFIG may wind up resembling an induction machine in appearance. Voltage support is decreased, however, because of the reactive power used by the DFIG to offset large transient stator currents. Regulation of a chopper is demonstrated in [8], where the voltage across a dc link is altered using parallel capacitors; [7] demonstrates an improved version of this technique, known as crowbar control. Using a crowbar in the rotor winding and another in the dc-link, with the latter only activating if the dc-capacitor voltage is over a particular threshold, coordinated crowbar protection [9] may prevent damage to the motor.

Improving the plan and execution of a high-voltage super durable magnet generator with a two fold stator

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ABSTRACT: For marine current energy applications, this research examines direct drive optimization and control using Double Stator Permanent Magnet Generators (DSPMG). Tidal energy conversion projects and common conversion chains are briefly discussed in this article. First, turbines are briefly discussed. With a revolutionary multi-objective generator design technique that considers tidal speed, control strategy, and converter size, it was constructed. DSPMG's conceptual advantages may turn an open phase defect into a continuous operation. A fault-tolerant and optimized control system may be useful. Surface-mounted permanent magnet motors in good and poor health are utilized to eliminate torque ripple. The inquiry focuses on the stator short circuit between revolutions. The research offers a motor dynamic equation-based paradigm. Altering motor power supply control based on simulation findings for defects or imbalances is conceivable. Torque ripple may be decreased.

Introduction

Wind, geothermal, solar, and ocean energy are among the most sought-after renewable energy sources for ensuring future energy security while still adhering to the Kyoto treaty. Ocean renewable energy is a major sector. Although they span more than 70 percent of the planet, seas may provide far more energy than any other source on the planet. Global ocean resources are projected to be between 2, 000 and 4, 000 TWh per year, according to authoritative sources [1].

Wave energy, tidal energy, osmotic energy, ocean thermal energy, and marine biomass culture are among the most well studied and widely used methods for harvesting ocean energy. For this reason alone, marine current power is a more appealing alternative to other forms of renewable energy [2].

Marine current energy offers enormous potential in France, which is bolstered by strong R&D and industrial capabilities [3]. The French government, labs, and enterprises work to construct a full research and development system that includes financing, source modeling, experimentation, generator design, converters, transmission, and grid integration.

Inductor based quadratic DC converter solidness study

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Abstract. The SLQB converter, which is based on a switched inductor, is described in this work. Studies on the theory of control design are extensive. Analyzing tiny signal dynamics may be done by employing the State-Space Averaging technique for SQB converter closed-loop performance analysis. To design and test the controller, a modified version of Ziegler-Nichols' closed-loop tuning technique is utilized. The theoretically anticipated transfer functions were found to precisely match the results of the Spice circuit simulator. In this collection of DC-DC converters, the SLQB converter's efficiency and adaptability are shown. Matlab was used to conduct open- and closed-loop performance analysis, and graphs were created for each analysis.

1. Introduction

DC-DC converters are increasingly being used as power optimizers in renewable energy systems (RES). This application needs larger converter boosting capability. The need for more efficient and dependable topologies for high gain DC-DC converters is growing as a result. DC-DC converters are used in a variety of applications, including computers, telecommunications, and automobiles. Most of these systems depend on a steady DC distribution regime, which is essential to ensuring peak performance.. Stability analysis may be used to precisely establish a controller's stability, which is beneficial for both controller design and circuit operation study.

Literature on DC-DC converters uses both continuous and discontinuous conduction models. There are several DC-DC converter modeling approaches, such as Mason's gain formula, PWM switch modeling, CIECA, unified topological approach, alternative PWM switch modeling and signal flow graph modeling [1–9].

International Conference Latest Studies In Engineering Research

HOMOTOPY OPTIMIZATION FOR THE COMPRESSION OF A MULTIBODY MODEL OF A VEHICLE

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abstract

For tasks like design optimization, sensitivity analysis, parameter identification, and controller tuning, which can require hundreds or thousands of simulations, the reduction of complex multibody dynamic models remains an important topic of investigation, despite the increasing computational power of modern processors. Initially, we create a detailed Adams/Car model of a mass-produced SUV. Then, in Maples, we create front and rear suspension models called single-link equivalent kinematic quarter-cars (SLEKQ, pronounced "sleek"). All suspension connections are combined into one unsprung mass at each corner of the vehicle to reduce the computational complexity of including bushings or kinematic loops. The high-fidelity Adams model is used to generate lookup tables or polynomial functions that are then used in the SLEKQ models to simulate the kinematic behaviour of a complete suspension model. Each SLEKQ model's capacity to forecast behaviour is contingent on the accuracy with which its nonlinear spring and damper parameters, such as the bushings' stiffness and damping contributions and the unsprung mass, are accounted for. Parameters that allow for the smallest gap between Adams and MapleSim model responses are found through homotopy optimization. Four-post heave and pitch tests are used to verify the dynamic performance of the SLEKQ models integrated into a reduced 10-degree-of-freedom model of the whole vehicle compared to the high-fidelity Adams model.

production

The methodical development of a minimum complicated model that describes the behaviour of interest in the original model with enough accuracy is a central goal of model reduction approaches [1]. This goal is similar to Einstein's famous remark that models should be made as simple as feasible, but no simpler [2]. Particularly in the design and optimization of car suspensions, where bushings and kinematic loops lead to stiff or differential-algebraic equations that may be time-consuming to solve, a simplified model can be of great assistance.

First, we create detailed Adams/Car1 models of a production SUV's front MacPherson strut and rear semi-trailing-arm multi-link suspensions. Then, we use MapleSim2 to create a model of a quarter-car with a single equivalent kinematic link (SLEKQ, pronounced "sleek"). Suspension links are treated as a single unsprung mass at each corner of the car, similar to the method employed by Charism [3], to reduce the computing complexity of the model and account for things like bushings and kinematic loops. Each SLEKQ model has the same kinematic behaviour as the comparable full suspension model, which is a significant improvement over the simplistic quarter-car models that have been utilized before and give merely approximations of the genuine suspension kinematics. The kinematic behaviour of each SLEKQ model is defined in this study using polynomial functions acquired from the high-fidelity Adams model. A benefit of this method is that it allows a single multibody model to be used to represent a wide variety of suspension types by simply modifying the kinematic curves and model parameters. Furthermore, rather than revising particular hard point locations, the performance implications of shifting the suspension curves (such as the connection between camber and vertical displacement) may be examined simply by tweaking these curves directly in the model.

Each SLEKQ model's dynamic performance is dependent on the precision of the parameters chosen for the nonlinear spring and damper (which includes the stiffness and damping contributions of the bushings) and the unsprung mass. Homotopy optimization [4], an optimization method that aims to prevent convergence to a local minimum, is used to determine the parameters that minimize the difference between the Adams model's response and the MapleSim model's response. This study employs homotopy optimization in a manner similar to that provided by Vyasrayani et al. [6], and is connected to the work of Abarbanel et al. [5]. After determining the appropriate values for the SLEKQ models' characteristics, a simplified, 10-DOF model of the whole vehicle is built and compared to the Adams model in terms of its

Influence of compaction on the properties of remoulded cemented sands

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ABSTRACT

Both in-depth laboratory analysis and scale models were used to investigate the characteristics and behaviour of compacted cemented sands in Kuwait. While being dug up, the cementation bonds are broken and the catch, as it is called in the area, is changed into clayey sands with a high percentage of particles (anywhere from 20% to 40%). All the fundamentals were checked: basic characteristics, compaction, permeability, direct shear, and consolidation. A circular plate was also loaded to failure in model testing on compacted soils. The relative compaction of the test soil was 85%, 90%, 95%, and 100%. Results show that when relative compaction is reduced from 100% to 85%, the ultimate bearing capacity and the shear strength parameters c , decline significantly, while the compressibility parameters C_c , C_s , and the permeability rise. Rates of change in a number of soil characteristics are analysed as a function of relative compaction.

Keywords:

tests for relative compaction, remoulded cemented sands, direct shear, consolidation, permeability, and models.

INTRODUCTION

In the state of Kuwait, you may find large amounts of cemented sands both on the surface and buried behind layers of blown sand (Ismael et al. 1986). Cementing chemicals precipitate at the sites of contact between particles due to an excess of evaporation over rainfall even in the winter (Keyline and Judd 1957), leading to bonding and cementation and the production of cemented layers. Calcium carbonates, magnesium carbonates, and calcium sulphates are all used as cementing agents (gypsum). Cementation varies in intensity from location to location and even within a single location at various depths. Extreme anisotropy and possible moisture sensitivity characterize these materials (Barton 1993). Cementation's

involvement in elevating the strength parameters c , has been the exclusive focus of recent studies, which have been limited to laboratory determinations of a small number of cemented sand samples (Clough et al. 1981, Saxena and Latrice 1978). These competent deposits in Kuwait City are often buried behind a thin layer of desert sand and range in depth from 0 to 7 meters. We took a close look at their characteristics and behaviour (Ismael 1999, Ismael 1993, Ismael et al. 1986). When the material, known as catch in the region, is excavated, the cementation connections

are broken and the material is transformed into silty sands or clayey sands with a fine content (0.075 mm) of 20 to 50%. It's a staple of the engineering and earthwork construction industries as a kind of backfill. Specifications must have a relative compaction, the ratio of the field compacted dry density to the highest laboratory value established by the Standard or the Modified Proctor Test, defines this level of compaction. Between ninety and one hundred percent is a common range for this level of compactness. Understanding how relative compaction affects soil characteristics and behaviour under applied loads is of major importance. This was accomplished by doing extensive laboratory soil testing on a clayey sand "catch" soil sampled from a single location in Kuwait. Basic properties, direct shear, consolidation, and permeability tests were performed on remoulded samples compacted to relative densities of 100%, 95%, 90%, and 85%. These relative compaction values were also used in model testing using a circular steel plate loaded to failure in a sand box. Specifically, the effects of relative compaction on the strength parameters, compressibility, and permeability are discussed in this study. Model experiments are also analysed to see how the effects of the applied loads change the final bearing capacity and settling. These findings highlight the significance of field compaction to the success and safety of earthwork projects.

Laser drilling of AISI316L sheet: geometric feature modelling

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ABSTRACT

Extreme difficulty is encountered while micro-drilling AISI316L. Such an operation could benefit from the use of nonstandard machining techniques. The most effective method for micro-drilling is the use of a laser beam. Laser drilling may provide superior results due to the beam's high heat energy and divergent convergence properties. In this study, we employ a Nd:YAG laser beam and explore how changing the laser's input parameters affects the outcomes. In order to reduce the total number of tests, we get maximum data for each trial. As a result, a rotating composite center has been included into the design. Analysing inputs and outputs using analysis of variance helps isolate influential factors. This article demonstrates that the top-hole circularity is significantly influenced by both current and gas pressure. The bottom side circularity is significantly affected by the current and the pulse frequency. The hole taper is significantly influenced by the cutting current and cutting speed.

Keywords:

longitudinal bias correction, analysis of variance, repeated-measures design, AISI 316L, hole taper, hole circularity.

INTRODUCTION

Cutting tiny holes in cutting-edge materials is a formidable challenge. The stainless steel AISI316L is widely used in the healthcare, transportation, aviation, and aerospace sectors, among others. AISI316L is a bio-compatible material because to its exceptional material qualities, which include its high heat conductivity, good corrosion resistance, and high strength, etc. It's a key component of orthopaedics. E. Audiard et al. (2017) and A. Bharati's et al. (2013) both note its extensive usage in the biomedical and bio industrial fields. Laser drilling is employed in the medical field, the automotive industry, and many others today. In comparison to more traditional machining processes, its many advantages [A. Kekic et al., 2014] make it stand out. These advantages include the absence of tool wear, the absence of contact between the tool and the work piece, the low waste of materials, the precise hole features, and the micro-machining.

The laser beam is very powerful and uniform in color. In laser drilling, the laser beam itself serves as the cutting tool. Focusing a laser beam on a material's surface causes the laser's kinetic energy

to be converted into heat, melting the substance in the process. This liquid is now being evaporated away. Using a blast of high-pressure gas, any leftover debris is expelled. Drilling a hole into the workpiece with pinpoint accuracy is the last step [I. Choudhary et al., 2012; A. Dubey et al., 2008]. Advanced materials like titanium, nickel-based alloys, AISI316L, etc. are often machined using a laser beam machining technique. High-speed steel and AISI316L have both been machined using laser cutting. The authors observed a correlation between the cutting speed and power input and the resulting kerf width while processing steel. G. Gautam et al. (2018); K. Ghany et al. (2005); R. Goyal et al. (2016); and A. Hascalik et al. (2013) are just a few of the studies that examine the role that factors like pulse frequency (PF), power, gas pressure (GP), and cutting speed (CS) play in the formation of kerf width and heat affected zone on general metals. While some studies have shown that increasing laser power results in a wider kerf, other studies have shown that increasing cutting speed narrows the kerf. When cutting 4130 steels with a laser, PF is essential for minimizing the HAZ and KW [S. Kumar et al., 2006]. Machined HAZ from SS304 diminishes when laser power is increased. If you raise the CS, the KW will go down [A. Lamikiz et al., 2005].

DESIGN AND LAYOUT FOR PERFORMING EXPERIMENTS

The statistical approach of design of experiment known as response surface methodology (RSM) Modelling and optimization applications have benefited from this technique. In the engineering world, this technique is often used to find the best possible solution. Central composite design (CCD) is only one of the various experimental approaches used in RSM. When compared to other experimental designs, this one is by far the most effective. Typically, a second-order regression model is built for CCD [A. Pandey et al., 2013]. Equation 1 below is used to determine the ultimate number of experiments for CCD.

$$N = K^2 + 2K + C$$

Mathematics of uncertain multi-body systems

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abstract

As a consequence, numerous branches of simulation technology are warming up to the idea of taking uncertainties into account in numerical simulation, which is both reasonable and frequently necessary for producing trustworthy results. However, uncertainties have only been sometimes taken into consideration in multibody system analysis. Uncertainties are often thought of as being of a random character, or aleatory uncertainties, which may be effectively managed by using probability theory. So-called epistemic uncertainties, such as those attributable to a lack of knowledge, to subjectivity in numerical implementation, and to simplification or idealization, actually account for a significant portion of the uncertainties built into dynamical systems in general, or multibody systems in particular. As a result, a suitable theory is needed to describe epistemic uncertainty in multibody systems, which is still a challenging problem. In light of this, an approach will be introduced that incorporates epistemic uncertainty into multibody system modelling and analysis. Based on fuzzy arithmetic, a subfield of fuzzy set theory, this strategy uses fuzzy numbers to represent the uncertain values of the model's parameters, which is a relatively straightforward and realistic representation of the fuzzy range of potential parameter values. By giving simulation results that account for the dynamics of the system as well as the impact of the uncertainties, this cutting-edge modelling approach allows for the derivation of more complete system models that surpass the conventional, crisp-parameterized models.

Introduction

Knowing the model parameters well is crucial in MBS modelling and simulation for producing results that are accurate representations of the real system's behaviour. The problem is that when models grow in complexity and richness, it gets harder to pin down their individual parameters. There may be considerable ambiguity in the indicated parameters, and it will be difficult to offer

precise values for them. Moreover, assumptions of idealization and simplification are necessary to create a mathematical description with an appropriate number of degrees of freedom, despite the aforementioned growing focus on detail in modelling. As a result, despite appearances, even well-modelled MBS might display its inherent uncertainties as a result of modelling flaws, inaccurate data, or a lack of complete understanding. The lack of knowledge, fuzziness in parameter specification, and subjectivity in numerical implementation are all examples of the types of uncertainty that fall under the umbrella term "epistemic uncertainties" [1]. The analogue to this system is the term "aleatory uncertainty," which refers to the randomness or variation that occurs in nature. Probability theory, and in practice, often Monte Carlo techniques or polynomial chaos methods, are used to tackle aleatory uncertainty with success. When contrasted with this, extended modelling with epistemic uncertainty remains challenging from both a methodological and computational perspective. The notion of fuzzy set theory [2] has been gaining popularity in recent years as a method to describe epistemic difficulties. In this paper, we provide a novel interdisciplinary approach to system modelling and analysis that incorporates uncertainties, especially epistemic ones, from the outset of the modelling process. This strategy relies on a subfield of fuzzy set theory called fuzzy arithmetic, which has seen increased use with the development of the Transformation Method [3].

Uncertainty Classification

Even though there is a vast variety of uncertainty manifestations, the above classification into aleatory uncertainties and epistemic uncertainties is generally accepted and useful [1]. This classification is utilized throughout, despite the fact that alternative categories (such [4]) may be used in a nearly equivalent fashion. The following descriptions will elaborate on the various ideas and the scopes of their application.

Risks of the Aleatory Variety

Mechanical considerations of the continuum for rigid bodies and fluid-structure interactions

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abstract

Continuum mechanical issues for both deformable and rigid solids, as well as fluids, are discussed in this study. All systems are approximated using the same finite element method. Particularly, we provide a standard displacement-based formulation for the deformable solids and use this framework to describe the transformation of the solid into a rigid body in the limit of infinite stiffness. Last but not least, we show how to immerse a discretized solid into a fluid for fluid-structure interaction issues.

Introduction

Oftentimes, a mechanical system may be thought of as a continuum, regardless of how its parts are physically interpreted (see Malvern [12]). Both the Eulerian and Lagrangian descriptions of the local balance of momentum are possible within this continuum mechanical framework. Due to the lack of a universal analytical solution for the considered initial boundary value issue, we use a space-time finite element solution approach to approximate and solve the weak form of the problem (see Hughes [10] for more details). Since the employed degrees of freedom are no longer independent when bodies are assumed to be stiff, a numerical solution cannot be attained inside the typical finite element framework. The finite element system may be rewritten in terms of a skew coordinate system based on a special Caserta theory (see Rubin [13] for details).

By include the rigidity assumptions inside this reformed system, a set of differential-algebraic equations (DAEs) regulating the motion of the rigid body may be obtained. It will be shown that skew coordinate systems are required due to interpolation problems in the director field. These DAEs are the result of a rotation-free formulation made possible by using the new coordinate system directly; for details, see Bertsch [5]. If we use an appropriate null-space approach (see Bertsch [1]), we may further reduce these DAEs to a minimal set of equations in terms of generalized coordinates, and thereby recover the classical Newton-Euler equations. Finally, we demonstrate how to generate an appropriate Euler-Lagrange mapping when

immersing a solid in a fluid using the underlying finite element framework (Liu et al. [11] and Hersch et al. [8]). Since the solid is seen as a momentum source field emerging from the fluid, this interpretation holds. Since we don't have to Ramesh the fluid at each stage, this approach is preferable for fluid-structure interaction issues. Similar methods have been used to submerge particles; however, they rely on the contributions of nodal forces rather than the field equations for the solid (Hu et al. [9]).

Continua

In this part, we quickly summarize the key equations that need to be understood. While fluids are modelled using a Eulerian framework in the real configuration $B \subset \mathbb{R}^3$, developments involving solids are based on a broad non-linear approach inside a Lagrangian framework defined in its reference configuration $B_0 \subset \mathbb{R}^3$. In the first part, we review the fundamental equations for a hyperplastic body that may undergo deformation, and in the second section, we modify this formulation to include the characteristics of a rigid body. Subsection three provides a concise review of fluids.

The Mechanics of Materials Subjected to a Discrete Strain

To begin, let's think about a deformation mapping that changes over time: $B_0 \rightarrow B \subset \mathbb{R}^3$, where $[0, T]$ represents the time range between the beginning and conclusion of the motion. Specifically, (\cdot, t) represents the equivalent mapping of the surface. Please be aware that the limits must.

$$\Gamma_u \cup \Gamma_\sigma = \Gamma \quad \text{and} \quad \Gamma_u \cap \Gamma_\sigma = \emptyset$$

where u represents the Dirichlet boundary and the Neumann boundary. For the present state, write but $= t$. (B_0). For simplicity, we will refer to material locations as $X \in B_0$, material velocity as $\dot{x} = \dot{x}(X, t)$, and deformation gradient as $F = D\phi$. On top of that, we assume the presence of a strain energy function (C): $B_0 \rightarrow B \subset \mathbb{R}^3$, where C is the right Cauchy-Green deformation tensor and $C = F^T F$. The

Micro-scale horizontal-axis wind turbines get new air foil

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ABSTRACT

The purpose of this research was to find the optimum dimensions for the blades of tiny, horizontal-axis wind turbines operating at low wind speeds. The blades were designed with efficiency in mind using the blade element momentum (BEM) theory of blade optimization. Single (W1 & W2) and multistage (W3) rotors with radii of 0.2 m, 0.4 m, and 0.6 m, and a variety of blade geometries, were studied. The BEM theory was implemented using MATLAB and XFOIL to design a series of six innovative air foils (NAF-Series) for low Reynolds number applications on tiny horizontal axis wind turbines. In order to create the experimental blades, a 3D printer was used to create a virtual model of the blade. XFOIL software was used to study the performance of recently developed air foils at Reynolds numbers of 100,000, including the NAF3929, NAF4420, NAF4423, NAF4923, NAF4924, and NAF5024. Tip speed ratios between 3 and 10 and angles of attack between 2 and 20 were examined. The power coefficient, lift coefficient, drag coefficient, and lift-to-drag ratio were optimized and studied by varying these parameters in MATLAB and XFOIL software. Both the single- and multi-stage rotors had a cut-in wind velocity of around 3 meters per second. The optimum values for the ratio of tip speed to axial displacement were 0.08m, and the angle of attack was 6 degrees. At low Reynolds numbers, the proposed NAF-Series air foil blades outperformed the basic SG6043 and NACA4415 air foil designs in terms of aerodynamic performance and maximum output power.

Keywords:

Synonyms: blade geometry; 3D printer; power coefficient; solidity; tip speed ratio.

INTRODUCTION

Having reliable access to energy is crucial to building a prosperous economy and thriving society. Wind turbines use the power of the wind to create electricity, making them a sustainable energy source. Using an improved blade, the compact horizontal-axis wind turbine only needs a wind speed of 4.2 m/s to start up, making it suitable for use in roadside or rooftop installations without the need for further mechanical assistance (Lee et al., 2016; Ismail et al., 2018; & Abrar et al., 2014). Power for generating torque was drawn mostly from the turbine blade's leading edge (Wright and Wood, 2004; Clifton and Wood, 2007). For the blade design calculation of propeller performance, the Blade Element Momentum (BEM) model provides good accuracy and high computing efficiency. At about 6 meters per second of wind, the tested rotor reaches its maximum power coefficient value of 0.371, whereas the optimized

rotor reaches its maximum value of 0.388. (Gur and Rosen, 2008; Hassan Zadeh et al., 2016). Three turbulence models were examined using computational fluid dynamics (CFD) and blade element momentum (BEM). Two-kilowatt (kW) compact horizontal axis wind turbines with 1.8-meter rotor radii and 6-to-1 tip speed ratios (TSRs) at low wind speeds were studied for use in rural settings (Chaudhary and Prakash, 2019; Suresh and Rajkumar, 2019). A dual-rotor turbine configuration was suggested and studied by Rosenberg et al., 2014. In this dual-rotor design, a smaller, aerodynamically optimized secondary coaxial rotor is positioned in front of the primary rotor. At the same tip speed ratio, the multistage wind turbine researched by Nugroho et al., 2019 performs better than the single rotor, and their research indicates that a (X/D) axial distance ratio of 0.18 is optimal. One of the primary goals of long-term preparation is the achievement of sustainable development.

DESIGN PROCESS FOR AIRFOILS AND BLADES

Thickness to camber ratios provide the basis for air foil research and development. There are now a variety of Low-Re HAWT air foils that have been simulated and analysed using the XFOIL to aid in the selection of air foil procedures. For the purpose of evaluating the aerodynamic performances of novel air foils, the SG6043 and NACA4415 air foils were chosen based on their prevalence in the relevant literature and the results of the Foil analysis. The NAF is the official abbreviation for the new air foil. The work presented here includes the development and optimization of air foils for use in the rotors of small horizontal-axis wind turbines, including the NAF3929, NAF4420, NAF4423, NAF4923, NAF4924, and NAF5024. The multirotor design researched by Jaya Priya et al. (2019) may be utilized to maximize energy production in confined spaces.

When creating rotor blades, air foil is a crucial factor to consider. Increasing the air foil's lift-to-drag ratio improves its power coefficient and torque output (Chaudhary and Roy, 2015; Singh and Ahmed, 2012). Aerodynamic properties of air

Deliberate Activities Of The board and its Significance

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Abstract

New departments have been added to our publications and conferences, and new approaches have been incorporated in our research since the inception of M&SOM. Will they benefit the field in any significant way? Some regard them as a hindrance, resulting in a disjointed society that is unable to communicate effectively because its members do not share a common language. Others rejoice in the increased diversity we've achieved and the new frontiers it has opened up for scientific study. We contend that neither side is completely incorrect, nor completely accurate. We, too, maintain that we must contribute to an ever-expanding range of areas by employing all available methods of investigation.. The challenge of fragmentation is one that we share with the people who raised it earlier. To break out of its rut and have greater influence, the

discipline has to raise meaningful questions and deliver fascinating answers. I avoid the trap of specificity (great solutions to narrowly defined topics), (ii) connect and actively interact with various audiences, and (iii) be brave to pioneer new fields of investigation. When it comes to many of today's most pressing problems, operations management is a critical component.

1. Introduction

This was Professor Lee Schwartz's first public report on the M&SOM project at a symposium in Hanover, New Hampshire, in June 1996. Before the MSOM conference, a single-track multi-echelon inventory conference had been held. Let's fast forward to the present day in 2019. The last MSOM conference at the University of Texas at Dallas included 12 tracks, including sessions on sustainable operations, healthcare management, revenue management, behavioral operations management, empirical operations management, technology management and the IS/OM interface. This information was absent from the 1996

A Look at the Development of Physics and Its Social Role

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Abstract

This paper analyzes the recent growth in our understanding of physics in general and quantum world in particular focusing on its relevance to our society. Physics touches every aspect of our lives. It involves the study of matter, energy and their interactions. As such, it is one area of science that cuts across all other subjects. Other sciences are reliant on the concepts and techniques developed through physics. Other disciplines — such as chemistry, agriculture, environmental and biological sciences — use the laws of physics to better understand the nature of their own studies. Physics focuses on the general nature of the natural world, generally through a mathematical analysis. Physics is one of the most difficult subjects taught in schools. A number of students are even more daunted with its use of mathematics.

In a study done in UK from 1985 to 2006, it was found that there was 41 percent decrease in the number of entries to A-level examinations in sciences. This decreasing trend is similar in other countries. Despite this trend, physics remains an integral part of the educational system. It is through physics that new methodologies were developed that helped improve the quality of life, including things such as automobiles and modern construction. Society's reliance on technology represents the importance of physics in daily life. Many aspects of modern society would not have been possible without the important scientific discoveries made in the past. These discoveries became the foundation on which current technologies were developed. Discoveries such as magnetism, electricity, conductors and others made modern conveniences, such as television, computers, phones and other business and home technologies possible. Modern means of transportation, such as aircraft and telecommunications, have drawn people across the world closer together — all relying on concepts in physics. In 1999 during the World Conference on Science (WCS), the UNESCO-Physics Action Council considered physics an important factor in developing solutions to both energy and environmental problems.

International Conference on Trending Application in Science and Technology

Immunity-Boosting Metal Complexes

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ABSTRACT

Emerging infectious illnesses and a growing number of multidrug-resistant microbiological pathogens combine to make the treatment of infectious diseases a significant and difficult challenge. Still, there are a lot of availability of antibiotics and chemotherapeutics for medical use and the rise of to both older and more recently developed antibiotics has increased dramatically during the last several decades. Antimicrobial drug development is urgently needed in the medical field. For the most part, people believe that they require the isolation of hitherto unknown chemicals having antibacterial properties, which may method of action that is different from those of established groups of antibacterial antibiotics, drugs, etc., against which many common infections have developed resistance in clinical settings.

INTRODUCTION

For example, Paul Erlich's organoarsenic substance for the treatment of syphilis, antiarthritic gold preparations, and diagnostic agents for magnetic resonance imaging are all examples of medications based on metals or metalloids in the field of medical inorganic chemistry (Gd, Mn, Fe) to name a few. Many different ailments may be treated with the use of metals that have also been employed as medications and diagnostic agents. The terms under which. These include the

Impacts of the pandemic on current age's schooling and the significance of advanced change of day to day existence

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ABSTRACT

Digital technology has been a constant presence in the lives of today's children since they were born. There are still a number of digital divisions in society that have an impact on today's youth and their ability to prepare for a technologically advanced future. For the sake of today's young and their technologically dependent future, educational institutions must undergo massive digital change. In light of the COVID-19 epidemic, schools and education have had to undergo a drastic transformation in their policies. The influence of the COVID-19 pandemic on basic education, the diversity of digital divides that have formed and reinforced, and the likely difficulties that have been documented are all part of this study. Research in information management should pay more attention to children, their digitalized life, and their fundamental education. We should take into account this generation's demands when it comes to the education we give in the framework of higher education, but we should also seek to impact their basic education in the hopes of nurturing their interest in this sector and potentially making it a career choice for them.

1. Digitalized everyday life of the young generation

Every aspect of today's children's lives has been influenced by the constant presence of digital technology, including social media, smartphones, tablet computers, and the Internet. In their daily lives and education, digital technology has become an integral part of their daily routines. Because they began engaging with digital technology as infants, if not even earlier, they will be completely and deeply integrated into the digital world throughout their adult lives. For the future to be as technology-rich as it is now, children of today aren't as prepared as they should be (1). Many types of digital gaps, such as those between those who have access to digital technology and those who don't, still exist in our society and have a negative impact on the digital futures of the younger generation... Research and education in information management are concerned about this issue. To be sure, we've looked at how technology availability and use create digital divides quite a bit previously (2), but our knowledge of how these differences affect the younger generation and the many ways in which they shape their lives is still rather limited.

There have been severe environmental issues as a result of this epidemic, including how to handle MSW and toxic biological waste. It has been stated that the lockdown imposed by authorities to contain a disease epidemic may have an impact on the volume and source of solid waste created. This infection was traced back to China, where the COVID-19 virus was first discovered. There must be a generational shift in digital technology skills and competencies for this to happen (3). Design and innovation-related skills and competencies are just as important as programming and computational ones.

Educating the next generation for the requirements of the future is the responsibility of schools, which are in a vital position in this regard: Schools, on the other hand, are finding it increasingly difficult to keep up with the rapid advancements in digital technology. It's possible that schools have different levels of resources, knowledge, competence, or a genuine desire to study. Today's young people and their digitally-dependent future necessitate that schools and children's education undergo a dramatic transformation. When it comes to disposing of contagious and noninfectious medical waste during the COVID-19 outbreak, the WHO has issued guidelines. More than 80% of all healthcare waste is noninfectious rubbish,

International Conference on Trending Application in Science and Technology

LOW-INCOME FAMILIES ARE UNHEALTHY DUE TO THE PROCESSED FOODS THEY BUY

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Introduction

In the United States, many low-income families are unable to afford nutritious foodstuffs. Families in the medium to upper income range are more likely to buy healthful food. For the goal of this study, I want to examine how low-income families' poor health is caused by their preference for processed food over more nutritious options. Low-income families are unhealthy because they rely on inexpensive, pre-made foods that are heavy in salt, which raises blood pressure and increases the risk of heart disease. In the second part, we'll talk about where and what low-income families are most likely to turn to for low-cost meals. If there are any possibilities for low-income families who want to eat healthfully, we'll talk about them in the third section. Programs that collect food contributions from the public and use coupons for discounts, as well as food stamps, are the most probable candidates. The pricing of healthy,

non-processed food items will be discussed in the fourth aspect. The shortage of nutritious food and the high demand for it among the general population are two such issues. The fifth part of this section will focus on the harmful impacts of a lack of access to good meals on children in low-income homes. Children's health risks and poor eating habits may both be harmed as a result of this practise. Low-income households are more at risk of developing health problems because of the factors listed above.

Cheap, Sodium-Rich Foods and the Risks they Pose

Food that is pre-processed and rich in salt is mentioned as a factor in the paper's opening section. Foods that must be heated in a microwave or that can be taken out of the oven are the most probable causes of excessive salt content. Sodium has a role in diet, according to Katherine Zeratzsky. "Salt (sodium

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Protocatechuic acid and aldehyde's antioxidant properties are like "new wine in old bottles."

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ABSTRACT

Phenolic compounds are a kind of secondary metabolite found in foods including fruits, vegetables, and spices. Due to their antioxidant, anti-inflammatory, and anti-carcinogenic qualities, they have attracted a lot of interest as a means of protection against a wide range of chronic illnesses. Classed according to their chemical make-up into several categories that include phenolic acids, flavonoids, curcumins, tannins, and antioxidant feature of quinolones. Their structural differences lead to their unique positive benefits on human health. Through increasing the production of natural antioxidants, scavenging for free radicals, and generally being all-around good at keeping things from oxidizing too quickly, phenolic chemicals provide protection against oxidative stress. Resistance to apoptosis. 3, 4-dihydroxy benzoic acid, also known as protocatechuic acid (PCA), and protocatechuic aldehyde (PAL; 3,4-dihydroxybenzaldehyde) are polyphenols that grow naturally in produce and plants.

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