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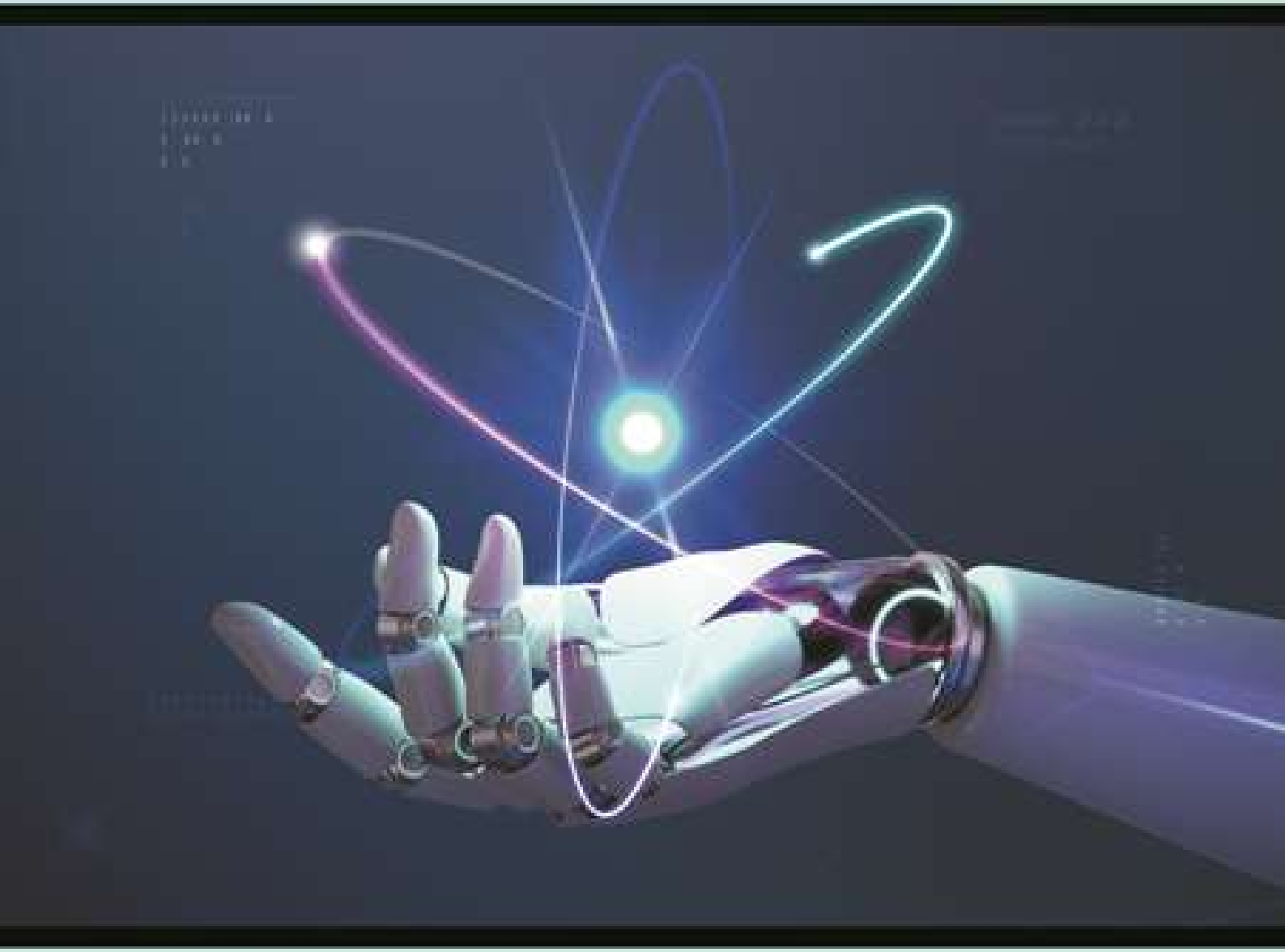

B P International

UNDERSTANDING CONCRETE TECHNOLOGY

(For Civil Engineering Students)

Dr. T. G. VASISTA B. E., M. E., Ph. D.
Dr. R. K. HEGDE B. E. M. Tech. Ph. D.

A MUST-READ BOOK TO STUDENTS PURSUING DIPLOMA IN CIVIL ENGINEERING

Understanding Concrete Technology
(for Civil Engineering Students)

According to American Society of Civil Engineers, "Civil engineers build the world's infrastructure". Teaching concrete technology is important for students of civil engineering domain The invention of concrete was one of the key developments in human evolution. It allowed the construction structures that would sustain for longer periods in terms of decades if not centuries. Concrete as a sustainable building material is used to enhance the strength of the structure.

Dr. T. G. Vasista, is currently working as an Associate Professor in Pallavi Engineering College, Hyderabad. He worked earlier as education and research consultant at Vasista Consulting and Performing Services Pvt. Ltd, India. He has about 26 years of overall experience in addition to all full time educational qualifications period. He started his career as a lecturer in civil engineering. He studied B. E., (AU) M. E. (IITR) and Ph. D (SRU) all in Civil Engineering from Indian Universities and also acquired additional educational diplomas and doctorate degree (distance mode from Dominica) in computer related studies in addition to his teaching experience in civil engineering domain, he acquired theoretical and Practical knowledge in Software, IT, Management Information systems and Construction management fields and served in India, Libya, Saudi Arabia and Ethiopia. He is a Professional Member of ISTE and CSI. He also served as Board of Studies Chairman and Head of civil engineering department suggested to include neutral subjects like Design Thinking in all lateral domains to be part of engineering curriculum. He published about 80 publications having book chapters, articles and research papers in national, international conferences and journals with AIRCC, ACPI, IBIMA, IGI Global, IEEE, MacMillan, Springer, etc. publishers and indexed with EBSCO, ProQuest, Scopus, Web of Science and other research databases. He served as a reviewer since the year 2010 and reviewed about 800 documents for many conferences and journal publishing houses. He won a best paper award in IT National Conference at APIM, 2007, New Delhi. He received an excellent construct reviewer award for three times from IBIMA International conferences, Best Researcher Award from IOSRD during the year 2018 in Visakhapatnam, India and Best Teacher Award from IMRF, Vijayawada, during the year 2022. He is the co-author of a book on Design Thinking earlier.

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A MUST-READ BOOK TO STUDENTS PURSUING DIPLOMA IN CIVIL ENGINEERING

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STRATEGIC MANAGEMENT AND ORGANIZATIONAL BEHAVIOR

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Heat Move using Light Weight Total in Concrete

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ABSTARCT

LWC and LWA are different from one another in terms of mechanical, durability, as well as thermal performance (NWC). LWC's heat capacity and thermal conductivity are challenging to measure since the components, combination proportions, and moisture states of the material have not been well researched.A variety of SLWC, ALWC, and NWC combinations as well as a variety of lightweight and normal-weight grout formulations were evaluated in this study. Studying concrete and grout combinations with this LWA was done and compared to past findings. The statistical models used have an effect on the enlarged slate LWA's thermal conductivity and heat capacity.

Keywords: Thermal conductivity, heat capacity, lightweight aggregate, and other terms used to describe the characteristics of heat

1. INTRODUCTION

Construction, design, and construction of both buildings and vehicles are affected by concrete's thermal performance. For accurate temperature profiles and heat flow measurements, it is necessary to understand the thermal properties of concrete. There are several other important criteria to consider when looking at the thermal performance of concrete buildings, in addition to CTE (such as dimensional stability, cracking resistance and insulation). 1 Structural and pavement engineers utilize thermal parameters like thermal conductivity and heat capacity to quantify heat flow and storage. Material thermal conductivity is a measure of its capacity to retain heat and reduce temperature fluctuations. Having a lower heat conductivity is linked to better insulate. 2 Building energy consumption can't be analyzed without taking into account these two factors.

1.1 Background

Both the individual components' individual thermal characteristics as well as any free space in the concrete mix affect its overall thermal properties. There are several variables that impact the thermal conductivity of concrete, including its age, volume fraction of aggregate, cement concentrations, admixtures, fine aggregate content, temperature and moisture content. 8 Many variables influence concrete's thermal conductivity, including the temperature, moisture content, density, and volume percent of aggregate. 8 Concrete's thermal characteristics are greatly affected by the aggregate, which normally makes about 60 to 70 percent of the volume of concrete. a total of one, nine According to Lane, the thermal performance of LWC when LWAs are added into concrete mixes is influenced when synthetic aggregates like LWAs have different thermal characteristics than natural aggregates like rocks and minerals (NWC). Because of its internal curing properties, 10 LWAs are becoming increasingly popular for use in construction and bridge building projects. The porosity of expanded LWAs can vary greatly depending on the raw material, the type of thermal treatment used to induce expansion, and how it is cooled, crushed, or graded throughout manufacture. Because "air voids and moisture content disguise the effects aggregate type," the thermal performance of LWC is directly linked to LWA porosity. 4

2. Modeling thermal properties and performance

All structural analysis models, whether they are used in building energy simulation models or pavement design tools, must accurately characterize the material's thermal characteristics. Due to concrete's thermal performance being affected by porosity, early forecasts used unit weight. Valore established a simple exponential model for the correlation between density and thermal conductivity. For the prediction of concrete's thermal conductivity, Campbell-Allen and Thorne15 employed a two-phase theoretical model that included both mortar and aggregate. Bhattacharjee and Krishna-moorthy9 have proposed an idealized system of "enclosing and enclosed pores" for porous materials' thermal conductivity, although Harmath9 refers to analogous two- and multi-phase models. The accuracy of other researchers' neural network models for estimating concrete's thermal conductivity has been demonstrated using real data values.

Concrete's thermal conductivity and heat capacity have been empirically examined in a number of publications using typical, standard-weight concrete or mortar particles (NWAs). Mortar and concrete's thermal conductivity is connected to the kind and moisture state of the particles used in construction, according to new research. These include specimen ages, water-cement ratios, admixtures, coarse and fine aggregate quantities [CFA], ambient temperatures and humidity levels, among others were examined in a study8 by Kim et al.7.

2.1 Publishedthermalproperties

ACI 122R-14 provides a range of values for the thermal conductivity and heat capacity of concrete that may be used for engineering purposes. Temperature data for popular construction and insulation materials is provided by ASHRAE in their Handbook of Heating, Refrigeration and Air-Conditioning Engineers (ASHRAE). The density of concrete is used to get suggested

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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 WellspringSeasonal ingredients are the focus of this article.

Geological miracles such as geological delivery, stone weeping, and depletion into wetlands, lakes, and seas may occur in nature due to the passage of water (Bagul et al., 2015). The product, free-effect minerals, and minor grades of key metals are

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Heavy Metals Contamination in Water and their Hazardous Effect on Human Health

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Abstract:

The volumes of toxicity in water of liberal metals such as Pb, As, Cd, Hg, Cr, Ni, etc. in different sources of water such as soil, surface, mechanical assembly water, etc. Substantial metals are assorted, some of them may be ruinous and are transported to the inclusive—atmosphere through different roads. Foreign affiliations such as WHO (2008), USEPA, EUC, EPA, when split and national as well, the centres selected were more than the most amazing reasonable and interacting cutoff. The social event of large metals and metalloids will devastate water through outflows from the rapidly emerging mechanical fields, mine tailings, high metal waste take-off, leaded fuel and paints, I Critical metal destructiveness has been discovered to be a goliath hazard and it coincides with a few flourishing hazards. The dangerous effects of these metals, paying little mind to the reality that they have no patent work, remain present in a few or other unhealthy situations for the human body and its suitable activity.

Introduction

There are regular degradations of the unsafe compounds that cause titanic fear for the surrounding customers. A significant number of toxins are reliably brought through the land and water-gifted world owing to intensified industrialization, technological abrupt unanticipated turn of circumstances, making humans and exploitation of common products, agrarian and surrounding squanders run-off. Among these latest compounds, big metals will create the most harmful bags, provided their predictable nature, harming propensity, friendship to accumulate in living objects and more generally than ever experiencing customary way of life change, they are not degradable. Because of their atmospheric stability and documented potential for certified flourishing results, solid metals with antagonistic effects on human consumption (lead, mercury, cadmium and arsenic control) show strong risks. Awful focal control may be compromised by unprecedented overpowering metal embryos, cardiovascular and gastrointestinal (GI) processes, lungs, kidneys, liver, endocrine organs and bones. Fully retaining a simple partition from reactivity to dangerous metals is beyond the imaginative brain's space. Despite all this, even citizens who are obviously not occupationally uncovered move on express metals in their body by means of responsiveness from various sources, such as fuel, rewards, or air. In any case, life decisions that mitigate the risk of ruinous huge metal take-up, such as dietary gauges that may facilitate the retention or survival of giant—metals eaten can decrease the potential of metal damage trends (Rajeev Kumar et al., 2014). One of the fundamental clarifications behind waste, considering growth, is the flow of attempts at or across the bank of water supplies which can cause the chance of accomplishment for all to burn via corrupted water and other related eatables.

Multiple references are available all around the globe, such as the immense metal infiltration, and have been tiny in the text. A few conditions or dismissals are conceivable, provided the amount of references gathered from the game plan. Manufacturers have attempted to cover most insane amounts of specifics in the metropolitan surges of Semarang, Indonesia, some of which are instantly broken down under: - dismantled the partnership between change, water and fish for their metal fixations in metropolitan surges, and noticed a major declining outline of lead fixations on creature size creating, at any rate for two unmistakable metals, Zn

In the same direction, through a monstrous degree of metals falling together, the fish live in usually dirty battles have built a physiological immunity. One of the typical causes for basic waste is big metals present in water, algae, fish, and other marine foods. In considering this explanation, the world of big metals and their cunning impact on the human being are constantly of a researcher/tension toxicologist. The hazardous impacts of big metals are solid, which is why the non-corruption properties of the major metals are high. At some phase, the essential metals should not be polluted with ordinary damage separated into various compounds created over time. And giant metals have terrible impacts at low fixation, which can prove lethal to any living creature. Their concentration of biota can be relaxed by bioaccumulation (Widianarko et al., 2000; Ganagaiya et al., 2001). Destructive metals are both

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Improvements in Steel Truss Structures

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Abstract-

It's becoming increasingly common for structural analysis and design software programmes that employ the finite element technique to ease complicated calculations by allowing users to input data simply. Rather, it relies only on the data provided, with no consideration given to the project's viability or feasibility at all. Steel is a popular choice for skyscrapers, commercial buildings, and residential complexes because of its strength and capacity to handle larger weight.. It is possible to use structural steel for the roof and ceiling joists to ensure the project's long-term sustainability. Higher levels of protection may be provided by steel-based structures, which can withstand both heavier loads and more powerful winds. Any construction project may benefit from using steel as a building material. You may be able to save money on the project's budget since time is money. With the sound of steel, your door will ring in the not-too distant future. Once you've done your measurements and cutting, you'll save time and work. If anything goes wrong, there's no need to start again. Because of the pace at which steel can be worked, a project's completion date may be accelerated.

This study uses concepts like structural efficiency, steel trusses, and optimization. Remarks to get the ball rollin. In the building of trusses, composite materials have been extensively employed because of their remarkable features and low cost. In civil engineering projects, composite trusses have been used because of their superior strength and performance. When it comes to truss bridge building, the most common materials employed are concrete and steel.

Introduction

All aspects of structural component design, manufacturing, and assembly have been thoroughly researched. Composite trusses, which differ from civil structures in terms of materials, strength, stiffness, and weight, have been studied by engineers since the 18th century [1-3]. It was determined that prestressed cables had an influence on structural composite systems. A number of recent studies have studied the use of prestressed steel cables and concrete compression members in the building of composite space trusses. Composites have been thoroughly studied in terms of their overall performance and features. Both of these statements are true at the same time. More study is required in the design and analysis of composite trusses with pretensioned cables, despite the fact that multiple studies have been published. Background

The most helpful structure has a vague time span. Because certain parts of a building are better than others in terms of quality, this is the case. Unique characteristics, such as weight, feel, and rigidity, are examples of what we refer to as "objectives." Structure quality may be assessed in terms of its weight, value or stiffness if a certain target attribute is chosen. No solution can be found as long as optimization is done within predetermined parameters. First and foremost are design limitations, such as a finite geometrical extension or a lack of access to particular materials.

What make up the building blocks The structure's response to a stressful environment may be seen in the structure's behavioural limits. Pressure and displacement limits, dynamic reactivity, and tensions and tensions might be handled. All constructions must maintain far kinematic equilibrium in order to avoid becoming just mechanical gadgets. Restricting someone's freedom of action is one example of this. Good candidates for implementation are structures that fit inside the parameters of the optimization issue. Motivation

Optimisation is achievable for a wide range of objectives. I refer to it as "multiple goal optimization" (also referred to as multi-criterion or vector optimization). With this in mind, one might point to Galante's 1996 effort to reduce weight by adopting the fewest unique profiles feasible as an example. In multi-goal optimization, new objectives may be constructed by combining the weighted components of objective functions. Changing the weights might produce Exclusive Optima. It is possible to accomplish multi-goal optimization in a variety of ways. Trusses may be improved in three different ways: size, shape, and topology (or arrangement). First, the optimal cross phase area for each structural component and the relationship between each member must be identified before optimising the form, topology, and size of the structure as a whole. Using multi-degree optimization, the three variables may be improved by first optimising the topology (additionally called layered optimization). In certain cases, it is not possible to come up with the best possible overall answer using this strategy. A genetic algorithm may thus be used to optimise all three parameters simultaneously [9]. The truss might be improved upon.

Triangular bars put together to form a structure known as a truss are one example. Trusses aren't usually joined using friction-free connections, though. The joints of real-world trusses, on the other hand, are more or less stiff due to the employment of welded or screwed bars. A friction-free model may still be used to illustrate the scenario if the centre of gravity axis has some stiffness in the connections.

REVIEW OF LITERATURE

Vaibhav B. Chavan et. al. (1990) Researchers compared Hollow and Regular sections in this research. To better grasp the concept of Hollow Sections, researchers ran a study to examine how much money may be saved. A variety of height and material cross-section combinations are used to compare profiles for a particular span or load. This software was used for both analysis and design. In order to see whether the

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Increasing the Structural Effectiveness of Steel Trusses

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Abstract-

Structure analysis and design software programmes that utilise finite element methods are becoming more popular because they make complex computations easier to understand by enabling users to enter data more easily. No attention is given to whether the idea is viable or whether it is feasible at all. To create skyscrapers, commercial and residential complexes as well as other huge structures, steel is a preferred option. Roof and ceiling joists may be constructed from structural steel for long-term durability. Steel-based constructions, which can handle higher weights as well as stronger winds, may give better protection. Steel may be used as a building material in any construction project. Because time is money, you may be able to save money on the project's budget. Your door will ring in the not-too-distant future to the sound of steel. You'll save time and effort after you've completed your measurements and cutting. There's no need to start again if anything goes wrong. A project's completion date may be pushed up because of the speed at which steel can be processed.

Structural efficiency, steel trusses, and optimization are used in this work. Starting point for discussion. Composite materials have been widely used in the construction of trusses because of their exceptional qualities and inexpensive cost. Because of its better strength and performance, composite trusses have been employed in civil engineering projects. Concrete and steel are the most often used materials in the construction of truss bridges..

Introduction

The design, manufacture, and assembly of structural components have all been carefully investigated. This kind of construction, which is distinct in terms of material properties (such as strength and stiffness), has been investigated since the 18th century [1-3]. Structural composite systems were shown to be affected by prestressed cables. Prestressed steel cables and concrete compression members have been examined in the construction of composite space trusses in a number of recent research. There is much research on the overall performance and characteristics of composites. To put it another way, both of these assertions may be true at once. Composite trusses with pretensioned cables need more investigation, despite the fact that several research have already been published. Background

Most useful is an open-ended time frame. As a result of the fact that certain elements of a structure are superior in quality, this is the case. Our "objectives" include things like the product's weight, feel, and stiffness. If a certain objective characteristic is selected, the quality of a structure may be evaluated in terms of its weight, value, or stiffness. If optimization is limited to a set of specified parameters, no solution will be identified. To begin, there are design restrictions, such as a limited geometrical extension or a shortage of readily available materials.

What constitutes the fundamental constituents? The boundaries of the structure's behaviour show how it reacts to a demanding environment. Limits of dynamic pressure and displacing reactivity, and tensions and tensions might be handled. Far kinematic equilibrium is required for all structures to avoid becoming mechanical devices. A good example is limiting someone's ability to do what they want to accomplish. Structures that fall inside the optimization problem's parameters are prime candidates for implementation. Motivation

For a broad variety of goals, optimization is possible. "Multiple goal optimization" is what I call it (also referred to as multi-criterion or vector optimization). To illustrate this notion, consider Galante's 1996 attempt to cut weight by using the smallest possible number of distinct profiles. Weighted components of objective functions may be combined in multi-goal optimization to create new goals. Exclusive Optima might be created by adjusting the weights. For multi-goal optimization, there are several methods to go about it. It is possible to increase the size, form or topology of a truss in one of three ways: (or arrangement). Before optimising the overall structure's shape, topology, and size, the ideal cross phase area for each structural component must be determined. The three variables may be improved via multi-degree optimization by first optimising the topology (additionally called layered optimization). It is not always feasible to get the greatest overall solution using this method in certain instances. Thus, all three parameters may be optimised concurrently using a genetic algorithm [9]. It's possible that the truss might be made better.

One example is a truss, which is a structure made out of triangles. Friction-free connections aren't often used to attach trusses. Real-world trusses, on the other hand, use welded or screwed bars to make their joints more or less rigid. If the centre of gravity axis has some stiffness in the connections, a friction-free model may still be utilised to explain the problem..

REVIEW OF LITERATURE

Research by Vaibhav B. Chavan et al (1990) During this study, researchers compared the Hollow and the Regular parts. Researchers conducted a study to see how much money might be saved by using Hollow Sections. Various combinations of height and material cross-section are used to compare profiles for a certain span or load. As well as being utilised for research, it was also used to create. The manual and STAAD analyses were compared in order to establish whether they were equivalent.

Two longitudinal stress gradients remain: one running down the tube face and around its circumference (the membrane),

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Miners need a mining safety system in heavy industries to protect

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ABSTRACT

This paper shows the design and building of an experimental mine-protection device using a wireless sensor network as part of a safety system for mining operations. Research on miner health and welfare and safety actions is also included in this overview.. Next, the subsystems of the test system are modelled. It employed electronic circuitry, with a microcontroller as the primary CPU. This often refers to a programme with a graphical user interface (GUI)

Mine security using wireless–sensing networks, an Arduino Mega, a WIFI module, an LCD display, and sensors

1. Introduction

Workers' health and safety are at risk in a mining operation. These dangers emerge as a result of the various methods utilised to get certain minerals. The bigger the danger, the deeper the mine is. These safety concerns are all the more pressing in the coal industry. As a result, worker safety should always be a top priority in any mining operation, whether it is for coal or another resource. In an underground coal mine, ventilation and the possibility of collapse make it more dangerous than an open pit mine. A major risk to employees' health and safety exists regardless of what kind of mining is being done.

Opencast and underground mining safety has improved dramatically over the past few decades as a result of several safety measures, worker education and training, and health and safety regulations. Indian industrialization could not have taken place without coal, which has been India's principal source of energy for decades. To put it simply, coal accounts for more than two thirds of the world's electrical supply. Other byproducts, on the other hand, might pose a threat to the environment and the people working on the manufacturing line. A ZigBee-based real-time detection monitoring system is now being developed in the event that this is not practicable.

2. SURVEY ON LITERATURE:

Wireless sensor networks are used in this research to develop and build an experimental mine-protection device that may be used in mining operations. Research on miner health and welfare and safety actions is also included in this overview.. Next, the subsystems of the test system are modelled. It employed electronic circuitry, with a microcontroller as the primary CPU. This often refers to a programme with a graphical user interface (GUI) (GUI). Exams are available for certification in a wide range of fields. The sensors have an accuracy of 89.01 percent, 90.5 percent, 90.5 percent, and 89.53 percent with a resolution of 0.105?? C, 0.12 percent RH, 0.05 m/s, and 0.23 dB SPL. Ventilation switching and a noise-blocking system were included as monitored outputs. [Reference Number] here.

5.**BLOCK DIAGRAM:**

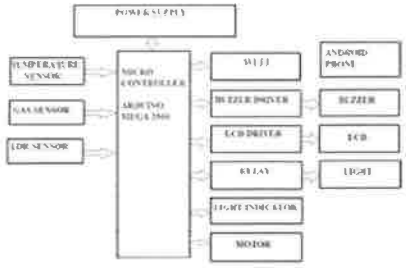

Figure 1: Block Diagram

EXISTING SYSTEM:

In the prior system, the focus was placed on wired networking. Wired technology has a physical constraint in that it is vulnerable to breakage. While employees rewire portions of the company, the flow of work will be disturbed. The use of a device of this kind is fraught with peril and requires extreme caution. It's rigid and doesn't have a well-established network.

SYSTEM RECOMMENDED:

Wireless sensor technologies are used in the proposed device. The sensor sheet, logic layer, and development layer are all included in the proposed system. With several threats, real-time considerations become increasingly critical. Human initiative and time are both greatly reduced by this machine.

2. HARDWARE MODULES:

1.ARDUINO (2560): MEGA

Using the ATmega2560-based ATmega2560-based ARM Cortex-M4 processor, the Arduino Super 2560 is a microcontroller module. Four UARTs

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Incorporation of GIS in the planning of Location-based highway construction

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ABSTRACT

This research shows that a GIS may be used to apply LBP on a highway construction project on its own. For highway building projects, LBP has been used in the past but only as a supplement to other methods. Highway construction projects are now being planned and scheduled using a variety of digital technologies. A single platform for all of the data will make it easier to keep track of, comprehend, and execute plans and timetables with more precision and comprehension. It is possible to store both graphical and non-graphic highway project data in GIS. With the use of GIS, tools have been created that can calculate job quantities, plan work activities, and estimate costs depending on where the work is taking place. With the use of GIS, highway project designers have the ability to alleviate many of the issues they now encounter.

Keywords:GIS;highwayconstruction;linearscheduling;location-basedplanning

I.INTRODUCTION

Repetitive construction projects include activities that are done at several places on the project. Repetitive linear projects are ones that cover a large area and are carried out repeatedly. Examples of linear projects include motorways, tunnels, trains, and pipelines. These projects resemble assembly lines in manufacturing, except instead of moving the product along a fixed path, workers and equipment move along the length of the project as it is being built to complete the duties. As a collective, crew members are responsible for completing a certain project. An area becomes accessible for another team to do its next duty when a crew has completed its assignment there. Linear projects like highways have fewer activities than building projects, but their design is critical in order to keep the labour motivated. It is very damaging to such machinery for crews to sit idle for long periods of time. the most serious of tasks.

1.1 Thelocation-basedplanningprocess

LBP changes the emphasis of planning from activities to places. The goal is to keep tabs on the movement of workers as they move between the several places where the project is being worked on. Each site has its own set of tasks and their associated amounts.Crews working on a certain project go from site to site until the job is complete.

An area is considered "complete" after all of its duties have been fulfilled. Design flaws, risk in project delivery and total manufacturing costs may be reduced by this method.

LBP, Contrary to popular belief, CPM has not found widespread acceptance despite its aptitude for planning recurring projects (Tokdemir et al. 2006). Contrary to commercially available planning and scheduling software that implements CPM, this method is not widely available, there is no computer implementation of it. When it comes to managing large civil and infrastructure projects, Dynaroad is the best option. However, it is mostly utilized in Scandinavian nations like Finland, Sweden, and Norway, where it is not well known. Here are some of the most important aspects of location-based planning.

1.2 Thelocationbreakdownstructure(LBS)

It is a work breakdown structure like those used in activity-based project planning. It is possible to determine a roadway project's LBS by segmenting its linear geometry. In the LBS, each segment is seen as if it were a real location. It's common for LBS to be hierarchical, with various layers of organization. Higher levels have a lesser number of major places, whereas lower levels have a greater number of smaller locationsAs seen in Figure 1, It is possible to plan and finish sub-projects at the highest level without relying on one another. Only one team at a time should be allowed on the lowest level, and the expenses of each assignment should have been pre-calculated. Depending on the terrain of the site and the amount of space needed for uninterrupted job execution, the locations at each level might be the same length or different lengths.

<table>
<tr><td colspan="6">Complete highway project (100 km)</td><td>Level 1</td></tr>
<tr><td colspan="3">Highway segment awarded to contractor A (50 km)</td><td colspan="3">Highway segment awarded to contractor B (50 km)</td><td>Level 2</td></tr>
<tr><td>15 km</td><td>15 km</td><td>20 km</td><td>20 km</td><td>15 km</td><td>15 km</td><td>Level 3</td></tr>
<tr><td colspan="6">Each 100 m segment of highway with estimated quantities, construction material, and crew requirements</td><td>Level 4</td></tr>
</table>

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Steel-concrete-steel sandwich beams have been examined both experimentally and conceptually to understand their internal forces.

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Abstract:

Steel plates are subjected to axial or shear loads to see whether the concepts of complete and partial contact hold up. Structural and frictional forces between steel and concrete, as well as stud connections, are all considered in this partial interaction investigation. The findings of DSC beam tests may be compared to theoretical predictions using the partial interaction theory. For DSC beams of any form, the theoretical technique may be utilised with confidence, according to the results.When it comes to building procedures, terms like "shear connections" and "sandwich beams" are commonplace

INTRODUCTION

DSC structures are those consisting of welded shear connections and steel plates sandwiched between two layers of concrete. A more flexible connection allows for more displacement, even though its design is identical to double-reinforced concrete components. This kind of structure has a lot more advantages than the alternatives.

Steel is a fundamental component in many steel–concrete composite constructions. Construction materials included steel plates, concrete and reinforcing steel. It is common to employ shear connections when combining steel and concrete to get the desired effect. In shear connections, steel-concrete composites exhibit a high degree of mechanical interlock.

The flow of shear and the distribution of strain are affected by steel-concrete contact. The modifications have an effect on properties such as strength, stiffness, and mode of failure. Steel and concrete may interact completely, partially, or not at all (Veljkovic, 1996; Oehlers et al., 2000). In some circumstances, assumptions might affect structural performance. A partial interaction assumption may improve behaviour predictions. Steel–concrete composite components often meet partial-interaction due to shear connection deformation and interface slippage under applied stresses (Johnson, 1994; Dogan, 1997; Roberts and Dogan, 1998; Oehlers and Bradford, 1999; Jeong et al., 2005; Ranzi et al., 2006; Gara et al., 2006; Queiroza et al., 2007; Ranzi and Bradford, 2007; Jeong, 2008).

2010 is a holy year for Christians (Sousa Jnr. and colleagues, 2010). Slippage in steel-concrete composite systems may go unreported because it is so little (that is, full interaction). A lower stiffness connection or fewer connections may be required when shear connections are not required. A system's stiffness may be greatly affected by the use of slides in specific situations (that is, partial interaction). A composite beam must have strong connections in order to move and deform. It is possible to assess the stiffness of shear joints using push-shear testing.

Results from Newmark et altests .'s reveal that (1951). Analysis may be used to determine the deflection of concrete and steel T-beams. They were just partly linked, according to this theory. The relationship between the longitudinal forces transmitted from the concrete slab and the applied bending moment may be explained by a second-order differential equation (DDE2). After Newmark et al. had finalised their own version, Yam was the first to implement it.

Yam (1968) and Chapman (1970) published papers on non-linear materials and shear connection behaviour (1968, 1971). (1981). After solving the non-linear differential equations repeatedly, the ultimate flexural strength of composite beams was determined.

Interface slip was revised and updated by Johnson (1975, 1981) using Newmark's calculations. These equations were used to investigate the loss of contact in short-span composite structures.

According to Roberts, partial contact composite beams may be studied in a novel way (1985). The equilibrium and compatibility equations of this approach are described by layer displacements. It is possible to solve simultaneous differential equations

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ABSTRACT

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

Introduction

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

Background
Treatment techniques

Sinkhole restoration procedures include complete excavation and replacement, pin piles to bedrock, pressure grouting, polymer injection, and combinations of these techniques. Cost, practicality, timeliness, and efficacy of these strategies may all vary greatly (Schokker, 2008). For typical Karst sites with voids in the rock and the overlaying soils and modest to moderate facility loads, slurry grouting is usually the best option (Fischer, 1996). Using compaction grouting is most effective on sound and shallow rock since excessive grout will be injected

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Investigation of Shear Capacities of Cold-Formed Steel Channel & Supa Cee Sections

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Abstract

Cold-formed steel channel sections have been widely applied in structural buildings. This type of section is then added stiffeners in the web to form the new section called SupaCee. The capacities of these sections have been investigated due to shear actions paralleling their webs. Shear forces are assumed to be resisted by the web, but the presence of the flanges and lips also have specific impacts on the shear capacities of these sections. This paper, therefore, investigates the effects of the flange widths and lip lengths on the shear capacities of the channel and SupaCee sections. Also, the shear capacities of SupaCee sections are studied to illustrate their strength improvements compared to those of channel sections. Shear capacities of the investigated sections are determined according to AS/NZS 4600:2018. The study demonstrated the innovation of SupaCee sections in shear strength improvements in comparison with those of channel sections.

Keywords: Shear capacities; Cold-formed steel; Channel sections; SupaCee sections.

Introduction Cold-formed steel channel sections have become a common product in structural buildings with numerous applications [1]. They can be subjected to compression, bending or shear. In terms of compression or bending, buckling modes such as local, distortional, flexural, or flexural-torsional buckling have been investigated in many research studies and are deeply understood [1]. In the case of shear, shear buckling of channel section was investigated with the consideration of the web alone, but the flanges and the lips were ignored in the behavior. There was not any consistent theory for shear buckling of full thin-wall sections. The channel sections have then added web stiffeners to increase the stabilities. These such sections termed as SupaCee sections have a variety of advantages compared to the traditional channel ones, as discussed in Pham and Vu [2]. The recent development of the DSM method for thin-wall sections in shear required the elastic buckling loads of the whole section in pure shear. Pham and Hancock [3-6] carried out a series of the channel and SupaCee section beams under shear to provide deep understandings of their strengths and behaviors. Also, Hancock and Pham [7,8] used the complex Semi-Analytical Finite Strip Method proposed by Plank and Wittrick [9] to develop the signature curve for channel sections under shear actions with the assumption of unrestraint at end conditions. Pham and Hancock [10] used a spline finite strip analysis to investigate the shear buckling of whole channel sections restrained at their ends. The spline finite strip analysis was developed by Lau and Hancock [11]. To reduce computer resources in analysis, Hancock and Pham [12] developed a new version of the semi-analytical finite strip analysis called reSAFSM that allows considering restrained ends in the analysis of thin-walled sections under shear actions. Channel sections with intermediate web stiffeners have been also investigated by Pham [13-14] using Semi-Analytical Finite Strip Method. This method was subsequently incorporated into the Thin-Wall-2 [15] in the analysis of the buckling loads under shear [16]. Thin-Wall-2 has been allowed to use for elastic buckling analysis of thin- wall sections according to the AS/NZS 4600-2018 [17]. The paper, therefore, is aimed to investigate the shear capacities of the channel and SupaCee sections with the variations of dimensions of the flanges and lips. The effects of the flanges and lips on the elastic shear buckling loads of thin-walled channel sections can be accounted for as presented in Appendix D3, but the intermediate web stiffeners are not included. Thin-Wall-2 software program [15], therefore, can be used for the elastic shear buckling analyses in this investigation. The shear capacities of commercial SupaCee sections are also investigated to illustrate their innovation in strength improvements based on comparing. the shear capacities between SupaCee and channel sections. The investigated sections are commercial sections provided by BlueScope Lysaght [18]. The THIN-WALL-2 software program [15] is used for elastic bucking analysis under shear actions, and the shear capacities are determined according to the AS/NZS 4600: 2018 [17].

Determination of the Shear Capacities of ColdFormed Steel Section

The nominal shear capacity of beams without transverse web stiffeners can be calculated determined according to AS/NZS 4600-2018 [17] as follows:

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Implementation Logical Key Hierarchy to a Nosql Database in Cloud Computing

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Abstract:

Data, software, and services are stored in faraway data centres but may be accessed via the internet at any time and on any device that has internet connection. This is known as "cloud computing." Broadcast communication has become a pressing problem in many locations because to the fast rise of the Internet. Transmission of a message from a broadcast centre to all or part of the users who are linked to it is known as "broadcast communication." In order to convey data to several recipients from the same source, various systems have been created. This scheme's Logical Key Hierarchy is by far the most often used one (LKH). To demonstrate how LKH structure may be integrated into a Nosql database on cloud computing, two apps have been built as part of this research: one for broadcasting and the other for user usage.

INTRODUCTION:

Today, cloud computing is becoming more and more popular and important. Using cloud computing, consumers may access services from wherever they are, without the requirement for a device, infrastructure or software. Users may rent cloud computing services to utilise the system or applications. Alternatively, the user may be able to store and handle his or her own information. Organizations that offer cloud computing services are referred to as cloud computing providers. Providers of cloud computing services are responsible for guaranteeing the security of the infrastructure they supply to cloud consumers. In lieu of purchasing the hardware or software they need, users may just rent it from the cloud. Cloud computing provides a number of benefits, including device, time, and location independence, a robust hardware infrastructure, and lower costs. On the other hand, it comes with certain security issues in addition to these benefits. Systems, software, and data that benefit users are at the heart of security. Broadcast communication includes the sending of data to several consumers. In broadcast communication, encryption technologies are often used to send messages to a large number of people. At this stage, multicast transmission necessitates the optimization of encryption algorithms. Several major management strategies have been studied by Prathap and Vasudevan in one of these studies. For user add/removal procedures, they've developed a novel hybrid key tree structure that combines the benefits of both techniques [1]. Key Tree Reuse is a new key management strategy presented by Gu et al. in another research (KTR). As a result of KTR, users can register with the same key value for multiple broadcast programmes. Re-keying expenses are lower in this structure than in the LKH structure [2]. Using an asymmetric (public key) infrastructure, Song et al. have devised a novel method for managing group keys based on dynamic group membership. Even if the cloud server is attacked by malevolent users, the suggested scheme's use of public-key encryption ensures data security [3]. Diffie-Hellman key exchange implementation on the LKH structure was described in another paper by Alyani et al., who also sought to construct a key management system by altering the LKH structure. Increasing the number of users in the subgroups of the tree is the basis for this adjustment [4]. The users' path to the root node of the LKH tree may be shortened by Sakamoto et al. in another investigation. The suggested technique makes use of the Huffman algorithm [5]. Liu et al. have presented a novel tree structure that uses an intuitive search method to lower the cost of the key update when users are added or removed. The number of nodes at each level of the LKH tree is likewise variable in this

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Implementation of Distributed Control System for Rice Mill Using C#

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ABSTRACT

In this article, we show you how to use C# to build a distributed control system for your rice mill. A more effective signal from the real-time control units may be used to construct the real-time manufacturing system. In comparison to more archaic forms of industrial control, current systems are much more expansive days. The Distributed Control System (DCS) is an innovative software-based system for controlling mechanical systems. More vogue than other traditional state-of-the-art security and safety technological advances in production. The focus of this study is on the DCS-based rice mill's implementation in visual C#.net. The In order to implement Industrial Ethernet (IE), the top-level controller for controller and command center for far-flung machinery. This model In terms of automation and efficiency, client-server architecture is preferable. Producing for scholarly investigation

Introduction

In Myanmar, RICE is used as a staple by all citizens. It's the most common source of calories in the human diet, surpassing even the grains themselves. In terms of availability on a per-person @ 31%, it fulfills 31% of the daily calorie requirement based on the average adult male weight (73.8 kg). Among the people. Burma (Myanmar) is the leading producer. In the global rice supply. In addition to the rice milling process. it's important to farmers to process bran for oil extraction, and the bran allocation of resources with the purpose of maximizing wealth, productivity, and manufacturing services [1-7]. There are several rice-processing factories that are common hullers, and they don't get the job done. Modern and up-to-date modern rice mills have expanded capacities and

Include principal was focused, but ultimately inept. Miniature the modern rice mills have developed and are available on the market, but knowledge is required to make obstacles preventing it from being accepted by a possible industrialist. The A presentable duplicate would help immensely in bridging to have a pause in the information. Block schematic of the whole system Figure 1 depicts a DCS-based system for a rice mill.

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IMPROVING THE PERFORMANCE OF THE PREDICTION BY MACHINE LEARNING ALGORITHMS

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ABSTRACT: Over the past few decades, Machine Learning (ML) has evolved from the endeavor of few computer enthusiasts exploiting the possibility of computers learning to play games, and a part of Mathematics (Statistics) that seldom considered computational approaches, to an independent research discipline that has not only provided the necessary base for statistical-computational principles of learning procedures, but also has developed various algorithms that are regularly used for text interpretation, pattern recognition, and a many other commercial purposes and has led to a separate research interest in data mining to identify hidden regularities or irregularities in social data that growing by second. This paper focuses on explaining the concept and evolution of Machine Learning, some of the popular Machine Learning algorithms and try to compare three most popular algorithms based on some basic notions. Sentiment140 dataset was used and performance of each algorithm in terms of training time, prediction time and accuracy of prediction have been documented and compared.

KEYWORDS: Machine Learning, Algorithm, Data, Training, accuracy

I. INTRODUCTION

Machine learning is a paradigm that may refer to learning from past experience (which in this case is previous data) to improve future performance. The sole focus of this field is automatic learning methods. Learning refers to modification or improvement of algorithm based on past "experiences" automatically without any external assistance from human.

While designing a machine (a software system), the programmer always has a specific purpose in mind.

For instance, consider J. K. Rowling's Harry Potter Series and Robert Galbraith's Cormoran Strike Series. To confirm the claim that it was indeed Rowling who had written those books under the name Galbraith, two experts were engaged by The London Sunday Times and using Forensic Machine Learning they were able to prove that the claim was true. They develop a machine learning algorithm and "trained" it with Rowling's as well as other writers writing examples to seek and learn the underlying patterns and then "test" the books by Galbraith. The algorithm concluded that Rowling's and Galbraith's writing matched the most in several aspects.

So instead of designing an algorithm to address the problem directly, using Machine Learning, a researcher seek an approach through which the machine, i.e., the algorithm will come up with its own solution based on the example or training data set provided to it initially.

A. MACHINE LEARNING: INTERSECTION OF STATISTICS AND COMPUTER SCIENCE

Machine Learning was the phenomenal outcomewhen Computer Science and Statistics joined forces. Computer Science focuses on building machines that solve particular problems, and tries to identify if problems are solvable at all. The main approach that Statistics fundamentally employs is data inference, modelling hypothesises and measuring reliability of the conclusions.

The defining ideaof Machine Learning is a little different but partially dependent on both nonetheless. Whereas Computer Science concentrate on manually programming computers, MLaddressesthe problem of getting computers to re-program themselves whenever exposed to new data based on some initial learning strategies provided. On the other hand, Statistics focuses on data inference and probability, Machine Learning includes additional concerns about the feasibility and effectiveness of architectures and algorithms to process those data, compounding several learning tasks into a compact one and performance measures.

B. MACHINE LEARNING AND HUMAN LEARNING

A third research area closely related to Machine Learning is the study of human and animal brain in Neuroscience, Psychology, and related fields. The researchers proposed that how a machine could learn from experience most probably would not be significantly different than how an animal or a human mind learn with time and experience. However, the research concentrated on solving machine

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Incorporating sentiment analysis and deep learning into a knowledge-based recommendation system

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Abstract—*Using online social networks (OSNs), you may get a sense of what people think about a wide range of topics. As a result, applications like monitoring and recommendation systems (RS) may gather and evaluate this information. An emotional health monitoring system is included in the Knowledge-Based Recommendation System (KBRS) described in this study, which may help identify users who may be suffering from depression or stress. According to the monitoring data, the sentiment analysis-based KBRS is triggered to deliver messages that are calming, relaxing, or energising to users who are experiencing mental health issues. In addition, if the monitoring system detects a depressive disturbance, the solution contains a way to notify authorised individuals. A Convolutional Neural Network (CNN) and a Bi-directional Long Short-Term Memory (BLSTM) - Recurrent Neural Networks (RNN) were used to detect depressed and stressed users, respectively, with an accuracy of 0.89 and 0.90, respectively. The experimental findings demonstrate that the suggested KBRS achieved a rating of 94% of extremely pleased users, compared to an RS without the usage of sentiment metrics or ontologies, which achieved a rating of 69%. It has also been shown that the suggested method utilises little memory, processing and energy from existing mobile electronic devices via subjective test findings.*

Index Terms—Deep learning, sentiment analysis, recommendation systems, social media networks, and personalization and modification of knowledge

INTRODUCTION

According to some estimates, there will be 2.95 billion active OSN users by the year 2020 [1], a significant increase in the number of people using these services. The rise in the number of Internet-connected mobile devices, such as smartphones and tablets, is largely to blame for OSN's large user base. Today, OSN are a rich and ubiquitous method of expressing one's thoughts and emotions, and they reflect the poor habits or healthy behaviours of each user. In recent years, numerous applications in the health care informatics business have employed the analysis of messages posted on OSN. For instance, phrases containing words with negative connotations may convey unhappiness, tension, or dissatiisfaction [4], depending on their context. On the other hand, a person's self-confidence and emotional stability can be improved if they are in a positive mood state [5]. If the sentiment intensity value of uploaded words remains low, or if it regularly swings from high to low and vice versa, these facts may suggest some emotional problem, such as depression or stress events [6]. They found that when people were depressed, they wrote shorter sentences than when they weren't depressed [7, 8]. Additionally, these people speak in the first person and have trouble sleeping. Because of this, their actions may be seen in the OSN phrases. As a result of monitoring and analysing particular terms in the sentences, it is possible to identify individuals who are at high risk of committing suicide and to provide an appropriate intervention. In all locations and cultures of the globe, depression is one of the most common mental health conditions [10]. Unfortunately, the prevalence of depression is still underrecognized. Sensors are used in most research on health systems [11–13] to identify mental illnesses. Based on the results of [14], an electroencephalogram-trained classifier is able to accurately identify stress with an average accuracy of 80.45 percent. There are three categories of stress: baseline, moderate stress, and severe stress, and a classification model based on heart rate variability data is proposed by the authors in [15]. Using textual in formation from OSN data to diagnose physiological issues is a rare occurrence. Machine learning (ML) classifiers are used by Xue et al. [16] to classify emotions from micro-blogs, with an average accuracy of 80%. [17] found that the suggested model for stress detection based on Twitter activity has a 69 percent accuracy rate. Using OSN data, researchers investigate the causes of postpartum depression in [18]. Studies on mood monitoring systems utilising OSN signals [19] also employ ML

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INDIAN SIGN LANGUAGE CLASSIFICATION AND RECOGNITION USING MACHINE LEARNING

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ABSTRACT: The discourse is regarded as a real illness. People with this disorder use different methods to interact with others. Various resources are required to interact with them. It would be really useful to create an application for the sign language for deaf people and sometimes people who don't recognise the sign language can interact easily. Our project aims at closing the communication divide through signs between regular, sour and dumb people. A paradigm based on perception in order to differentiate gestures from pictures is the key objective of this work. The rationale for usage of vision-based systems is that they provide a more simple and comprehensible way of communicating between a human and a computer. This research takes into consideration 46 separate gestures. We also used both the timing and spatiality of the video sequences in classifying gestures in sign language. Thus, for both time and space planning, we have used two separate methods. For the spatial features of the video sequences, we used the Inception model [14], the profound CNN (convolutionary neural network). CNN was trained in images in the video sequences of train results. We used RNN to train the model on time characteristics (recurring neural network). The CNN model was used to simulate a variety of predictions for each recording, educated for individual frames and layouts. The RNN has now been provided with this projection or pool layers of sequence outputs to training temporary functions. The set of data[7] is comprised of the gestures of Argentine sign language (LSA) with some 2,300 pictures in 46 motions. CNN has reached the exactness of the prediction for the RNN 93.3 percent and with pool layer results for the RNN 95.217 percent.

Keywords: Indian sign language, attribute extraction, KNN classification, CNN. Classification.

I. INTRODUCTION

Hand is a movement from any section of the body including the ears. Here for gesture recognition, we use image detection and computer vision. The way the computer understands human behaviors is recognized by the way. This helps people to interact instinctively with computers without direct interaction with mechanical devices. The sour and dumb society undertakes sign language acts. This community uses the sign language where music is not accessible or where it is impossible to read or compose, but it also has a hope of hearing. Only through sign language will information be communicated with people at the moment. Sign language is commonly used by anyone because they cannot talk, but this is the best way to interact with the deaf and dumb culture. The wording of the symbol is the same as that of the spoken vocabulary. The sign language is either one or two hands by hand or hand motion. Globally, however in its Localized nature, it is used by the sordid and dumb community, such as ISL and ASL; the isolated two-form sign language and the continuous sign language. The single-word discrete sign language while the continuous ISL is a series of acts that generate a clear statement. A single motion is the language of the sign. In this analysis, we used isolated methods to identify ASL movements.

1.1 Sign Language

Sordid people all around the world share a visual language that utilises a manual, face and body expression system to interact in sign language rather than spoken language. The wording of gestures is not a universal language, although in separate countries different sign languages such as the numerous speakers worldwide have been identified. In places like Belgium, Britain, the United States or India, there might be more than one sign language. Hundreds of sign languages are used in the world, including Japanese, British and Spanish.

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INTELLIGENT PERFORMANCE ANALYSIS AND STRATEGICAL SURVEY OF FINGER PRINT MATCHING SCHEME

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Abstract: *- In modern times, computer technology is growing immensely in the world and offers server and database handling techniques with multiple connectivity and support functions. These functions are very useful for all kinds of users on popular sites for their day-to-day purchases. However, in contrast to information security features, the issue generated by intruders or attackers is growing more and more, these types of people mainly aiming to breach the device authentication and hack the required data/information present inside the server/database, such that the data is easily stolen and accessible to others as well as there after the information is not listed as private In order to recover/resolve the problem of breaking the authentication, many writers proposed several methods and strategies, but still the opponent side is powerful enough to offer their full extent to difficult problems. The previous example discusses in depth with realistic evidence of problems with authentication breaking and its remedies, but these are constrained at some stage due to frequent pattern matching and choices for texture recognition. So, to solve these kinds of problems, the researchers/authors think that some comprehensive feature analysis scheme is required. A Finger Print Matching Scheme, or commonly called a Biometric Scheme, is the well-known and easiest way to provide proper authentication for all our apps, ERPs, servers, databases, etc., which analyses the proper finger print of users and provides an efficient authentication scheme to access the relevant characteristics of nature. In this review, the strategic analysis of previous works is explicitly outlined and described in depth compared to all other current features listed by various writers in different periods, regarding the best approach for solving these authentication problems.*

Keywords: *Biometric-Scheme, Matched Fingerprint, Pattern Matching and Identification, Authentication of Fingerprints, Proof of Fingerprints.*

INTRODUCTION

With the introduction of electronic-bank-account-management, business-management, operational maintenance, smart-cards, as well as an intensified focus on protection such as data security kept/handled in various databases, programmed person distinguishing evidence has become a vital issue. In a broad range of standard civilized applications, involving the usage of travel permits (for example passports), mobile phones, ATMs as well as driver licenses, correct coded person distinguishing proof is currently needed. In view of the possibility that Stick's can be missed or speculated by a faker and the tokens may be misplaced or stolen, classical mining-based (password or PIN) and token-based (travel permit, driver permit, and ID card) identifiable bits of evidence are inclined to blackmail. For egg, misrepresentation of MasterCard-Credit-Card alone currently adds up to more than laths and laths of USD annually [2]. Biometrics, which alludes to identifying a human in view of his or her physiological or behavioral features, has the potential to identify an accepted person and a sham reliably. It is important to operate for a biometric system in two modes: (a) validation mode and (b) evidence distinguishing mode.

Fig.1. Minutiae Detection and Marking View of the Fingerprint

A biometric structure operating in the confirmation mode either accepts or denies the asserted personality of a client whereas a biometric structure operating in the distinguishing evidence mode builds up the

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KEY AGGREGATE CRYPTOSYSTEM FOR SCALABLE DATA SHARING BY CIPHER TEXT DATA IN THE CLOUD

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Abstract:

Data sharing is a significant usefulness in distributed storage. In this article, we tell the best way to safely, proficiently, and deftly share information with others in distributed storage. We depict new open key cryptosystems which produce steady size ciphertexts with the end goal that effective appointment of decoding rights for any arrangement of ciphertexts are conceivable. The curiosity is that one can total any arrangement of mystery keys and make them as minimized as a solitary key, however including the intensity of the considerable number of keys being totaled. At the end of the day, the mystery key holder can discharge a consistent size total key for adaptable decisions of ciphertext set in distributed storage, however the other scrambled documents outside the set remain confidential. This minimized total key can be helpfully sent to others or be put away in a brilliant card with constrained secure stockpiling. We give formal security examination of our plans in the standard model. We additionally portray other utilization of our plans. Specifically, our plans give the main open key patient-controlled encryption for adaptable chain of importance, which was at this point to be known. In our cryptosystem, ciphertexts are labeled with sets of attributes and private keys are associated with access structures that control which ciphertexts a user is able to decrypt. We demonstrate the applicability of our construction to sharing of audit-log information and broadcast encryption.

Keywords – Cloud storage, Cloud storage, data sharing, key-aggregate encryption, Attribute-based encryption

I. INTRODUCTION

Cloud computing has created tremendous momentum in the IT industry that can be used to understand the kinds of computing, storage, and applications. Several IT companies dump data to cloud storage. Different users can access or send information stored in the cloud, regardless of their location. Distributed storage is picking up ubiquity as of late. In big business settings, we see the ascent popular for information redistributing, which aids the key administration of corporate information. It is likewise utilized as a center innovation behind numerous online administrations for individual applications. These days, it is anything but difficult to apply with the expectation of complimentary records for email, photograph collection, record sharing or potentially remote access, with capacity size more than 25GB (or a couple of dollars for additional than 1TB)[1]. Together with the present remote innovation, clients can get to practically the entirety of their documents and messages by a cell phone in any side of the world.

Thinking about information security, a customary method to guarantee it is to depend on the server to implement the entrance control after validation, which implies any unforeseen benefit heightening will uncover all information[2]. In a common occupancy distributed computing condition, things become much more terrible. Information from various customers can be facilitated on isolated virtual machines (VMs) however dwell on a solitary physical machine. As to of records, there are a progression of cryptographic plans which go similarly as permitting an outsider examiner to check the accessibility of documents for the information proprietor without spilling anything about the information [3], or without settling the information proprietors namelessness [4]. Moreover, cloud clients likely won't hold the solid conviction that the cloud server is working admirably as far as secrecy.

If the storage is compromised the amount of information loss will be limited. One disadvantage of

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Lightweight Internet of Things Intrusion Detection Based on Machine Learning

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ABSTRACT

In the IoT, small computer units make it susceptible to a wide range of assaults. A lightweight intrusion detection system (IDS) based on feature selection and feature classification is presented in this work to improve IoT security. The filter-based technique was used to choose the features because of its cheap computational cost. Based on a comparison of logistic regression (LR), neural networks, decision trees, random forests, KNN, SVM, and multilayer perceptrons, the feature classification approach for our system was selected (MLP). In the end, we chose the DT algorithm for our system because of its excellent performance across several datasets. The findings of this study serve as a guidance for selecting the best machine learning feature selection approach.

INTRODUCTION

As a new paradigm in computer networks, the Internet of Things (IoT) enables communication between all types of items over the Internet. Using a single addressing method, these devices may communicate and collaborate to accomplish a shared purpose, whether it RFID tags, sensors, actuators, or mobile phones, for example. It is possible to create ubiquitous computing via the Internet of Things (IoT) by mixing several forms of connectivity, all the time, on any item [2]. All aspects of our everyday lives are likely to be affected by this technology. Because of the hostile and insecure environment in which they are often deployed, IoT devices are more susceptible to various threats [3]. IoT devices must be protected against intruder assaults as a result. By examining the behaviours and events of a computer or network, an intrusion detection system (IDS) is able to identify and prevent assaults. A second line of protection against invaders [5] may be provided by this device. An IDS' primary goal is to identify as many threats as feasible with acceptable accuracy while using as little energy as possible in resource-constrained environments [6]. Signature-based and anomaly-based IDS are the two most common forms of IDS. IDS signatures, sometimes called misuse-based IDS, work by comparing fresh data to a database of previously known assaults to spot intrusions. This method is effective at detecting known assaults, but it often misses undiscovered ones. The anomaly-based IDS compares observed events to the actions that are deemed usual. IoT and IDS security have been the subject of several studies in recent years. A light anomaly detection method based on game theory was of interest to Sedjelmaci et al. [3]. A novel attack signature may be detected by an IDS agent using the Nash equilibrium, which the authors utilise to anticipate the equilibrium state. For wireless sensor networks, Li and colleagues [7] developed a novel intrusion detection system that uses the K-Nearest Neighbor (KNN) algorithm to classify suspicious activity. A flood assault on the wireless sensor network may be detected by the system. It also performs flood assault tests to learn more about their consequences. There is a distributed anomaly detection system for the Internet of Things proposed by Thanigaivelan et al. [8]. All of these functions may be accessed via a single interface. In the event that one of a node's neighbours doesn't keep up with the requisite rating, the nearby node is deemed an abnormality. SVELTE, a real-time IoT intrusion detection system suggested by Shahid Raza [4], is currently under development. Contiki OS uses an IDS that is built into IoT. Only content spoofing, gulp, and selective transfer assaults are detected by this method. Using the Scikit-Learn tool, Douglas et

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A Primer on Computer Science Research Design for Novices

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ABSTRACT

Throughout history, research has been a driving force behind the development and growth of every field imaginable. However, researchers with the necessary expertise are few. Education provided in the classroom or in the first year of college. In this study, we provide a method that is both efficient and process often known as the "Eight-Step Approach to Research," will teach you the fundamentals of "how to get started performing research" in this case, a computer science subfield. However, the document is computer science academics and students However, it is important to remember that this approach may appropriate for use in any academic discipline's pursuit of inquiry.

INTRODUCTION

A researcher's life is filled with reading research papers for a variety of objectives, including but not limited to evaluating them for a conference, journal, or course. Fresh in that area of research, or for the sake of a literature review of uncharted territory or to add another stone to the building of expertise in the field of study. The truth was that this cited accurately in S. Keshav's paper with reference to [1] "How to Read a Paper." While there are high-quality content about the systematic techniques for reading a writings, but few of the pieces really educate first things to do while beginning a research project for kids. To read and compose any kind of text, technical or otherwise in-depth study and research, one must first get familiar with abilities need to begin independent research in a region, subject, or focus. This is why it is the only reason the goal of this article is to provide information to curious newcomers in

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Ultrasound elastography for diffuse liver disease of Principles and clinical application

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Abstract

Exact appraisal of the level of liver fibrosis is significant for assessing guess and settling on a suitable course of treatment for instances of incessant liver illness (CLD) with different etiologies. As a result of the innate restrictions of liver biopsy, there is an incredible requirement for noninvasive and dependable tests that precisely gauge the level of liver fibrosis. Ultrasound (US) elastography is viewed as a non-obtrusive, helpful, and exact method to review the level of liver fibrosis by estimating liver solidness. There are a few business sorts of US elastography as of now being used, to be specific, transient elastography, acoustic radiation power drive imaging, supersonic shear-wave imaging, and continuous tissue elastography. Despite the fact that the low reproducibility of estimations got from administrator subordinate execution stays a huge restriction of US elastography, this strategy is all things considered valuable for diagnosing hepatic fibrosis in patients with CLD. Moreover, US elastography may likewise be utilized as a helpful observation technique that can be performed by doctors at the patients' bedside to empower the estimation of the guess of patients with deadly entanglements identified with CLD in a non-intrusive way.

Keywords: Elasticity imaging techniques; Liver cirrhosis; Hypertension, portal; Ultrasonography

Introduction

Chronic liver disease (CLD) has various etiologies, with the viral infection of hepatitis B virus (HBV), hepatitis C virus (HCV), human immunodeficiency virus, alcohol consumption, hepatotoxic drug ingestion, non-alcoholic fatty liver, autoimmune diseases, and cryptogenic hepatopathy being commonly encountered in daily practice. Histologically, liver fibrosis develops and gradually progresses as a result of following a wound-healing response in patients with CLD. In particular, activation of cellular elements including myofibroblasts and stellate cells results in collagen deposition and subsequent development of CLD [1,2]. Liver biopsy is known as the gold standard for diagnosing liver fibrosis. However, liver biopsy also has considerable limitations. The very small size of samples obtained through biopsy may not represent a heterogeneous distribution of liver fibrosis due to sampling bias [3]. In addition, the issue of intra- or inter-observer variability among pathologists in evaluating the grade of fibrosis is an additional limitation because the interpretation process is a subjective and semi-quantified method [4]. According to previous research on chronic hepatitis C, agreement among pathologists regarding the fibrosis grade is not excellent (κ, about 0.5) [5].

Although the rate of complications is very low and the risk has declined with the use of ultrasonographic guidance [6], liver biopsy is somewhat invasive and post-biopsy bleeding can be serious. With respect to non-invasive alternatives to liver biopsy, several serological or biochemical methods for the estimation of liver fibrosis have been validated primarily in patients with chronic hepatitis C, but still lack the ability to identify and classify the intermediate stages of fibrosis [7]. Introduced in 1991, elastography is another non-invasive technique for evaluating the elastic properties of soft tissue either quantitatively or qualitatively [8]. The elastography of the liver is

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Research and DSP Implementation of Speech Enhancement Technology Based on Dynamic Mixed Features and Adaptive Mask

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ABSTRACT

In this research, we present a deep learning voice enhancement method based on dynamic hybrid features, adaptive masks, and DSP implementation to address the issue of feature loss and boost the performance of speech improvement. E dynamic characteristics consist of the log Mel power spectrum, Mel campestral coecients, and Multiresolution Auditory Cepstral. Coecients (MRACC), and extract derivatives to fully describe speech transient information. And minimize alterations to its nonlinear nature.

Introduction

The use of speech signal processing technology is growing in popularity as artificial intelligence technology advances, and voice enhancement is one of its many applications. A central focus of study is the importance placed on this element. Improvements to speech may be made using signal extraction techniques. Background noise, lessen interference, and keep that is resistant to distortion and has AI-related applications. Voice recognition, hearing aids, and other areas [1]. These days, speech amplification techniques may be broken down into unattended and supervised are the two options. Unsupervised Assumptions like smooth noise and uncorrelated speech are often used in voice improvement. Noise, resulting in insufficient capability to dampen down nonsmooth caused by the same source that distorts speech and creates noise. Representative Wiener filtering and spectral subtraction are two examples of algorithms. Noise is reduced using supervised speech enhancement ([2]) by studying the signal's statistical characteristics, which has clear benefits in situations with a poor signal-to-noise ratio, and noise that is not smooth, and may be classified in two ways: addressing both simple and complex versions of models. Models of the superficial layer often include this model combines Hidden Markov Analysis with Simple Neural Networks. Because of the high number of layers and other factors, learning ability and performance are constrained. Little number of nodes per layer, and the information is only needed for In addition, the training is minimal. One way in which deep-learning models may acquire knowledge analysis of the complex nonlinear interactions between languages, which significantly helps them function better in situations when they don't know what to expect place(s) with a lot of background noise [3]. About three distinct categories may be identified.

Improved Deep Neural Network Model

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Robot Action Recognition Using a Multi-Modal Information Fusion Model

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ABSTRACT

Modern robotics field, driven by cutting-edge IT, is entering a new era of human-machine cooperation. In contrast to older robots, which need isolation rails to keep a safe distance from humans, the latest human-machine cooperation systems are designed to function in close proximity to humans. Maximizing productivity by intelligently allocating jobs to humans and robots, thereby capitalizing on their respective strengths. Approaches that lead to greater efficacy

Introduction

Human-robot interaction systems have emerged as a result of technological development. Achieving human-robot interaction requires two things: (1) the capacity of humans and robots to communicate and (2) the presence of a human or other socially acceptable robot. Is that the robot can interpret human speech, gestures, intentions, and other human cues with remarkable precision [1-3]. At the moment, the intelligence is often used as the medium for human-machine interaction. Robots. The usage of intelligent robots has expanded to various industries; including the three major economic pillars of the country are the service sector, manufacturing, and farming. Artificial intelligence (AI) robots are cooperative human-robot interaction entering a new phase business strategy steered by the latest wave of info-science and technology. The current generation of robots is dependent on make use of separation fences to keep a safe distance new generation of human-machine cooperation technologies may assist humans in their job rather than taking over removing physical constraints and maximizing the contributions of everybody involved people and machinery by strategically allocating operational activities and enhancing work procedures to get more productivity efficiency. Robots, for instance, will be used in the near future in many types of settings, including manufacturing. Being held accountable for arduous, perhaps harmful, and routine duties, freeing up people to concentrate on more interesting, dynamic, and creative work. Planning, or doing any kind of task that requires adaptability and fortitude. Essential to the development of a human-robot interaction system optimize human-robot communication and collaboration. This is in stark contrast to the keyboard, mouse, and other interface devices often used in traditional human-computer interaction. cumbersome, limits people's freedom of movement, and fails to ease the burden of labour for individuals. People with vocal capabilities In order to direct the robot's behaviour toward a certain goal, one must use gestures or activities, it may significantly

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Smart Key security for Vehicles Thefting

Smart Key security for Vehicles Thefting

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Abstract –

This paper shows a structure that possibly and conveniently gives an utilization of Internet of things in transportation by helping Fleet Management, Vehicle Security and Safety. Advancement makes progress absolutely when it meets every stratum of people. Associating the particular over the top GPS standard that are available in the market, this paper shows a vehicle following and unfriendly to theft structure that works basically using GSM-GPS and open source sorts of progress which makes it most reasonable system for Fleet Management, flourishing and security. The structure checks for change in GPS co-ordinates of the vehicle when not being used by the owner. Conclusively when the region of vehicle changes, owner is prompted by instigates with respect to content SMS Message. The substance SMS message contains current GPS Location of vehicle what's unyieldingly a heading message. The owner by then sends a SMS, which prepares the microcontroller to execute the vehicle by trading the exchange supply of the battery of the vehicle. The favored condition of this structure is that it helps the owner in following the vehicle at a clearly conspicuous pace, and diminishes the complexities stood secluded from various systems, other than being a most advantageous choice for against robbery system besides.

Keywords - Internet Of Things, Transportation, Fleet Management, GSM-GPS Tracking System, Anti-Theft System.

I. INTRODUCTION

Web of Things (IOT) is interconnection of things/objects utilizing structures, where things or things can associate with one another without or immaterial human mediation. It empowers the things to banter with one another and the client. IoT utilizes sensors and distinctive contraption to aggregate the information from the framework, programming to unwind the information and use it for required clarification and responsiveness to give correspondence between different structures. In that capacity IoT can give correspondence, control and data administering over the structure. Figure 1, shows the filtering through of IOT.

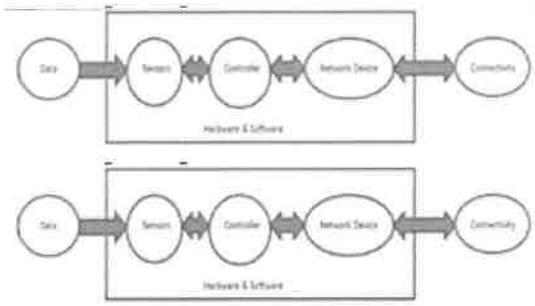

Fig.1. Architecture of IOT

1.1 Internet of Things and Transportation Leveraging IoT in Transportation can give applications in parts of transportation structures. Dynamic joint exertion between vehicle, foundation, and the driver or client associates with correspondence between vehicles, sharp leaving, toll blend structures, traffic control, key and ocean control the aces, vehicle security, accomplishment and street assistance. Cars, plans, and give near the paths and the rails outfitted with sensors, actuators and overseeing power may give huge data to the driver other than explorers of a vehicle to permit better course and security. Impact shirking structures and checking of transportation of hazardous materials are two standard model reasons for constrainment. Affirmed stars would in like way advantage by acutely careful data about street traffic plans for isolating through purposes. Where as, private transportation can locate the correct course with data about the jam and scenes. Endeavors, for example, load affiliations, would have the choice to perform sensibly reasonable course streamlining which awards giganticness hypothesis holds. Data about the improvement of the vehicles shipping things together with data about the sort and status of the thing can be made to give key data about the progression time, transport deferrals, and issues. For Fleet Management, degrees of progress which can give information about zone and status of the vehicle perpetually are required. Totally when all is said in done Positioning System (GPS) is routinely utilized as a space-based everything thought about course satellite structure. The zone data gave by GPS structures can be envisioned utilizing Google Maps/Google Earth. In remote

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Storage and Security Issues of Medical Images using Cloud Platform

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Abstract:

In this current era of technology people are interested more in online medical facilities for more faster and comfortable life. Because of huge demand, health care field is growing rapidly. The data in the form of x-rays, diagnosis reports, MRI images, videos is generated. Such form of data consumes large amount of storage space and processing power, therefore nowadays alternate solutions such as cloud storage are used to store such huge data. As the medical data in the form of images or videos is very important and confidential it is very crucial to concentrate on the issues like storage and security. The proposed work discuss about the image security techniques like watermarking using different types combined with data encryption techniques during transmission so as to ensure better security along with reduction in cost for storage with the use of cloud environment.In this study, we offer a deeper insight into the challenges hindering the adoption of this technology. Then we analyze and compare these findings of the cloud based medical image process implementation with security necessities.

Index Term: Image security, Watermarking, Health care, transmission.

I. INTRODUCTION

In the supportive associations field, recuperating picture planning through cloud will show to be a standard blueprint. As a last resort masters are benefitted as it gives epic pictures through which end should be conceivable with exactness and better treatment can be given through chronicled data and current data which will be investigated. In like way, this new perspective licenses empowered exertion between helpful associations specialists planned at better places.

Removing the distinctive perfect states of passed on getting ready, moving towards cloud a risings faltered troubles.

In such way, security and affirmation are the standard obstructive fragments for the wide confirmation of healing picture getting ready over virtual stage. Starting at now, different executions are proposed pointing towards the advantages of this new perspective.
Common pictures hold tight in progress data structures, cloud or elective systems are of key criticalness. Affirmation and security must be protected for such pictures through encryption and underwriting structures. Mixed and watermarked pictures during this required to be reversible in like way the plain picture handled inside the encoding and watermarking structure will be absolutely redeemable. In this paper, we will if all else fails undertaking an absolutely redeemable mixed and watermarked picture process system for the insistence of helpful pictures in progress data structures. The methodology is used to endure observer to and secure the accommodating pictures. Our results showed up, obviously, to be terribly reasonable and strong for completely recoverable pictures.

In the power disclosures the symmetric encryption figuring is proposed in which the riddle key is passed on from the patient individual data what's more watermarking is created for underwriting.

II. CLOUD SYSTEM ARCHITECTURE

The proposed system consists of the cloud architecture as shown in the figure 1, that describe some problem and it consist of four parts
1) IaaS that is the Infrastructure as a service
2) The Proxy service
3) The Server meant for security
4) Entry

A. IaaS

The IaaS is answerable for data accumulating and search segments. In any case, ethically the cloud organization supplier should not be empowered access to the information changed or hold tight inside the cloud. In these conditions, it is definitely not a clear task to develop a cloud based help that has server viewpoint data amassing and looking frameworks.

This organization abundance could in like manner be used to guarantee the game plan of the organization, and conjointly to help the quality of the system in passing on data. This is as often as possible potential through weight bargain of the sales through the specific assistance suppliers. Without a doubt, this organization is fundamentally the same as the guideline cloud organization IaaS which is referenced, since it should got the chance to go about as an exchange for the most cloud organization. Everything considered, what makes it not exactly equivalent to the most cloud organization is that the risk of having only a bit of the information.

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Timing-driven physical design for VLSI Circuits using Resonant Rotary Clocking

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Abstract- *Resonant clocking technologies are next-generation clocking technologies that offer low or controllable-skew, low-jitter and multi-gigahertz frequency clock signals with low energy consumption. This paper describes a group of circuit partitioning, placement and synchronization methodologies that permits the implementation of excessive speed, low power circuits synchronized with the resonant rotary clocking generation. Resonant rotary clocking era inherently helps (and calls for) non-zero clock skew operation, which permits in addition advanced circuit performances. The proposed physical layout waft involves included circuit partitioning and location methodologies that allow the hierarchical utility of non-0 clock skew machine timing. This layout glide is proven to be a computationally green implementation method.*

I. INTRODUCTION

accomplishing controllable-skew, low-jitter synchronization with low energy dissipation is a primary milestone for virtual synchronous very-massive-scale integration (VLSI) circuits working at better frequency regimes. To attain this milestone, designers may additionally use opportunity methodologies, consisting of a couple of clock domains or wi-fi [1] and transmission line-based totally [2-5] clocking technology. these technologies should be supported by way of particular layout flows and pc-aided layout (CAD) suites with a purpose to be viable in semiconductor implementation. on this paper, a physical design drift for circuits synchronized by means of a transmission line-primarily based clocking technology the resonant rotary clocking generation [5,6] is described. This paper is prepared in follows. In section II, a short evaluate of resonant clocking technologies is provided. In segment III, the proposed physical design methodology is described. In segment IV, experimental results of for various levels of the proposed bodily design drift are presented. Conclusions are counseled in phase V.

II. RESONANT CLOCKING

The winning methodology to generate excessive-frequency clock signals is to use on-chip frequency multiplication with phase-locked loop (PLL) additives. The on-chip PLL additives occupy chip region and result in problems with signal reflections, capacitive loading and strength dissipation that efficaciously restriction the most working frequency. also, in nanoscale complementary-metal-oxide semiconductor (CMOS) technology, the distribution of the clock sign from a unmarried clock supply over a clock tree network [7] has come to be pretty blunders-prone due to sign integrity issues. The resonant clocking technology [2-6] gift an opportunity to generating the synchronizing clock sign thru putting off the necessity to use a complex on-chip PLL component. The implementation of resonant clocking technologies requires long interconnects on the chip, which might be modeled via transmission traces. rather than the lossy RC characteristics of lengthy wires, (R)LC traits of transmission strains provide the bodily medium for oscillation. A common signal is excited and saved oscillating on transmission traces, which constitutes the worldwide clock signal.

There are three most important varieties of resonant clocking technology presented to date. those resonant clocking technology are categorized with admire to their oscillator kinds:

1) Coupled LC oscillator primarily based clocking [2],

2) standing wave oscillator based clocking [3,4],

3) traveling wave oscillator primarily based clocking [5, 6].

Coupled LC oscillator based totally resonant clocking generation presents a steady significance

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PSPWM BASED SCMLI TOPOLOGY WITH A REDUCED NUMBER OF SWITCHES FOR AC POWER DISTRIBUTION SYSTEM

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Abstract:

Creating a Phase Shift Pulse Width Modulated (PS-PWM) Switched Capacitor Multi Level Inverter was the primary motivation for this study (SCMLI). Input voltage and current waveforms from multiple photovoltaic (PV) sources are transformed into usable electrical power by power electronics converters. High-frequency alternating current (AC) electricity from solar photovoltaics (PV) is growing in popularity. By reducing the number of stages and components often used in power conversion, DC/AC SCMLIs, for example, may increase the speed of power conversion. We present a new PSPWM-based SCMLI layout, which requires fewer switches and a voltage balance across the floating capacitor than conventional designs (FC). There is one primary dc source and two auxiliary dc sources in the proposed topology. In theory, the proposed architecture might provide a voltage output (Vo) that is twice as large as the input voltage. Compared to the previous topologies, it has a greater discharge rate. Decreases in load voltage reduce the voltage stress experienced by switches. The proposed simulation results are analysed in MATLAB/SIMULINK.

Keywords: Power factor correction, Pulse width modulation, a stepped-up inverter, a float-charge capacitor, and ac-power-distribution frequencies

INTRODUCTION

The ever-increasing need for energy, as well as the apparently endless possibilities of solar power, may both be contributing factors to the rapid expansion of PV-fed applications. The development of power electronics will make photovoltaics more practical for application in settings that previously required less efficient power converters. High-frequency power distribution systems, such as those used in aerospace, communications, and computer applications [1, 2], benefit greatly from the integration of PV with power electronics technology. Using high-frequency alternating current is essential for an airplane's electrical system, as seen in the diagram to the right. Multilayer inverters (MLIs) are one kind of PV power converter, and they are used in the vast majority of commercial and industrial PV systems. The MLI's low dv/dt ratio and harmonic distortion are two of its many advantages (THD). In addition to AC drives, FACTS devices, renewable energy, and microgrids, it is clear that MLI has a wide variety of other potential uses. The term "multilevel inverters" is used to describe a broad category that includes many different types of topologies (MLI). High-voltage and high-power applications are where standard topologies really shine [3]. Although these topologies make extensive use of switches, diodes, and dc-link capacitors/dc sources, they only experience mild dv/dt stress. In [4], we see the introduction of a new MLI architecture that is both more efficient and gentler on the various components of the system. In these settings, the dv/dt pressure rises, but the number of switches in use drops. To lessen the workload and number of switches, [5-15] also includes SCMLIs. When a high voltage level has to be created with a minimal number of switches, SCMLI topologies are the way to go. These configurations use just a single dc supply and experience little dv/dt stress. The FC's

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PWM based control of room vectors for roundabout force estimation and the board

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Abstract : The study's mathematical model for a permanent magnet synchronous motor includes direct torque control and space vector PWM. Using mathematics, the author discusses the topic in this work. Mathematical models of PSMs in the MATLAB/Simulink environment are used to simulate direct torque control using SVPWM theory. Following a thorough explanation of the simulation model's procedures and processes, the simulation's end result is obtained. It has been shown that direct torque control based on SVPWM theory may greatly minimize torque ripple while also boosting current waveform and flux linkage waveforms during simulation. When it comes to dynamic and static performance, it boosts the system's ability to respond to changes in its environment.

INTRODUCTION

As permanent magnet material improves, power electronics, motor speed regulation theory, and microelectronics create frequency control technology of PMSMs. Due to their simplicity of manufacture, high moment of inertia, and high energy density, PMSMs are gaining popularity. [1] PMSM is often employed in robotic systems as well as CNC machine tools [2].

The hysteresis control of the standard direct torque control approach is used. This is due to the inverter switching frequency limiting the width, which means that only one basic voltage vector may be active at a time during a control cycle. To enhance the dynamic static performance of a system, it is possible to synthesize any required voltage vector for SVPWM control[2,3]. This reduces flux linkage and torque ripple noticeably. It is shown here that

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Straight forwardly controlled engine generator plan and model for minuscule breeze turbines

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Abstract. *It is the goal of this article to design and test an outer rotor permanent magnet generator for a small wind turbine. A initial draft of the generator's design is shown here. Permanent magnet selection and demagnetization risk assessment, machine losses, and heat analysis are all treated in this article. The final specs and test results of the prototype generator are also provided.. Since this is made evident, more investigation will be necessary..*

1. Introduction

There has been a stabilization in the global market for small wind turbines (1 to 300 kW) after the severe decrease in 2013 [1]. In 2014, 945, 000 small wind turbines were installed across the world, with steady increase in the three most important markets. (China, the United States, and the United Kingdom).

To spin the blades, a gearbox drives the shaft of a standard gearbox-operated wind turbine [2]. This means that even the slightest defect in a gearbox's numerous wheels and bearings may cause the turbine to shut down. [2]. As a consequence, gearbox maintenance is required on a regular basis. A gearbox decreases the overall reliability of wind turbines in wind energy installations. However, direct-drive has significant limitations in terms of cost and weight. It has been shown in the last two years[2] that geared systems are lighter and cheaper than direct-drive systems. The cheaper cost of permanent magnets used in direct drives and the more

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Streamlining of a Multi Source Power Plant for Power

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Abstract – While meeting demand and deducting on-line active losses, this research proposes a technique for optimizing a multi-source power station's economic and environmental performance while employing an ant colony algorithm in MATLAB version 7.6. A ponderation coefficient of 0.6 yields production costs of $819.996/h, emissions of $0.269 Ton/h, and total expenses of $968.033036 per hour for the IEEE 30 nodes network, with line losses of 6.92 MW and a calculation time of 6.38 seconds for the network. Using a computation time of 9.179 seconds and data for the Algerian 114-node network, we arrived at a production cost per hour of 19668.9445 dollars, emissions per hour of 0.673 tons, and a total cost per hour of 20596.032 dollars. On-line losses per hour were 17.1 MW. In the end, the findings showed that regardless of the network size, ACO produced the best values, while ACOS had the quickest convergence time. We found the technique to be superior to previous Meta – heuristic approaches.

There is now a greater understanding that more power is possible via the simple resonance of spring loadings. Spring resonance's ability to retain energy without significant loss is now well understood. This is a significant departure from current gear transmission system state-of-the-art.

Introduction

Power production from renewable sources (apart from nuclear) is complicated by the need for high shaft-power revolutions per minute and the corresponding torque. Because shaft revolutions per unit time are inversely proportional to torque, low-energy sources aren't a good fit for high-voltage power systems. In hydro dams, the enormous water mass and the potential height permit a massive torque that finally develops adequate speed for power production. Construction of a dam is notorious for its high costs and negative effects on the environment [9,10].

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Sunlight based Photovoltaic Framework Interconnection Plans with Halfway Shade

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Abstract:

Photovoltaic (PV) and Concentrated Solar Power (CSP) are two methods for converting sunlight into energy (CSP). In PV, light is converted into energy through the photovoltaic effect by using semiconducting material. There are numerous sources of solar energy, such as photovoltaic, thermal heat, and fuels, all of which provide a safe, abundant, and never-ending supply of energy for humans to harness. Since this technology offers so many advantages, a great deal of study into its development has been done and is now being conducted. For academics and scientists alike, this article will serve as a useful predicting tool for the future of solar photovoltaic energy systems. Partially shaded solar photovoltaic systems are rendered ineffective because the insulation received by the cells is negatively impacted. Altering interconnection patterns is one of numerous methods recommended for reducing the partial shadowing impact. One may find a variety of connecting schemes in the literature

1. Introduction

The use of solar photovoltaic systems has expanded significantly during the past several years. Insulation levels, temperature, partial shadowing, and the location of a solar PV system all affect the system's performance. Precise shading is the most critical of these design aspects. It's possible to have partial shadow when nearby trees, dirt, bird droppings, buildings, and poles reduce the amount of insulation in the cells/modules/arrays[10,11]. As a result, the production of cells that are shaded decreases, and this debris accumulates in the Environmental concerns have grown as conventional energy sources have been depleted due to population growth, research, industrial use, and other activities that create waste and pollute the environment. As a result, companies are looking for alternative energy sources and purchasing them to meet the rising demand. This means that renewable energy sources such as and tidal, geothermal, wind, microhydro and biomass, as well as solar power, may be converted into electricity. For solar energy, the sun serves as a major source since it emits both light and heat [9].

Furthermore, by burning and consuming fossil fuels on the Earth's surface, such as petroleum and coal, these fossil fuels emit carbon dioxide emissions that have a negative effect on the ecology and climate. In contrast, no carbon dioxide is emitted by solar power, making it an efficient use of natural resources while also being good to the environment. As the sun shines, it is converted into energy, which may be used in a variety of different ways by a solar power generating system. An estimated 42 trillion kilocalories of energy are emitted by our star each second. per. second. A single hour's worth of power would suffice for the entire world if we were able to

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Using the one layered TLM approach, we analyzed RLC circuits with lumped boundary damping examples

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ABSTRACT

Uses one-dimensional TLM technique to study transient behavior of a lumped parameter RLC circuit in this work under varied damping conditions A stub model of the procedure described above is used to obtain the algebraic iterative equation from the circuit model. As a consequence of this, the model equations developed using the TLM approach are organized systematically for ease of implementation into the current MATLAB program. Classical analysis was evaluated using a differential equation as a reference approach for comparison. We also compare our findings with those obtained by the conventional assessment approach. PSCAD's Bergeron model is used to simulate transmission line geometry. Single line to ground failures may only trip the defective phases using an innovative, non-iterative approach for addressing under-reach in the fundamental distance relaying system. In the event of a line-to-ground failure, COMTRADE files contain a time series of phase current generated by PSCAD/EMTDC software. Use this data in the non-iterative MATLAB code.

I. INTRODUCTION

Protection Relaying: Its Goals and Necessities

For the most part, transmission cables are safeguarded by distance relays [7]. When there is a significant difference in impedance between a relay and the fault site, they are able to detect the problem. Due to the relatively constant transmission line impedance, these relays can detect how far away a transmission line defect is. They isolate abnormal or fault situations in transmission networks by delivering trip signals to the relevant circuit breaker, which then shuts down.

Distance Relay in Power System

For the most part, transmission cables are safeguarded by distance relays [7]. When there is a significant difference in impedance between a relay and the fault site, they are able to detect the problem. Due to the relatively constant transmission line impedance, these relays can detect how far away a transmission line defect is. They isolate abnormal or fault situations in

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Utilizing the Bat calculation, conveyed age in outspread dispersed frameworks might be put and estimated to amplify proficiency

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Abstract. Distribution Generation (DG) has gotten a lot of attention from Radial Distributed Systems experts during the past several decades (RDSs). According to the Voltage Stability Index (VSI) and Total Active Power Losses (TAPL), the ideal location and dimensions are generally determined (TA- PLs).

Both of these objectives may be met with the help of a Solving the MOOP required a Bat Algorithm (BA) & Multi-Objective Optimization Problem (MOOP) based on the Weight Sum Method (WSM). Next, the method known as Fuzzy Based (FB) is employed to find the optimum compromise option. This algorithm is also compared to few others that have been released lately.

1. Introduction

Distributed generation (DG) is becoming increasingly important in radial distributed systems as need for energy grows. Generators that produce little amounts of electricity are often referred to as "DG" (from 1 kW to 50 MW). In addition to [2] and [3], Wind turbines, combustion turbines, micro-hydro turbines, solar cells, and other small power sources are often used in DG units.

When it comes to low- and medium-voltage cable networks, the R/X ratio of the radial distribution network is very high Fast Decoupled Load Flow (FDLF), Newton Raphson, and other power flow algorithms that often fail to converge. This problem has been addressed by a variety of alternative approaches. It is most often used algorithms, such as the BFS [4] and [5].

Distributed radial networks using DG units have recently attracted considerable interest from experts throughout the globe because to their efficacy in cutting losses, improving voltage

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Experiments Using a Design-for-Manufacturing Approach to Process Parameters for Fused Deposition Modelling.

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Abstract

As a quick prototyping method for visualising and validating ideas, additive manufacturing (AM) first emerged. As AM technologies like Fused Deposition Modeling (FDM) have advanced in recent years, they are now moving from fast prototyping to rapid production applications. The issue of manufacturing usable components for end-users utilising FDM proved to be a difficult one. Building direction, extrusion temperature, layer height, infill pattern and more are just few of the many variables that determine the final design of a component. Quality and functionality are influenced by the FDM process parameters. Detailed knowledge of the effects of the FDM processing settings on the mechanical qualities, dimensional accuracy, and construction time of the finished product is also needed. When it comes to the mechanical qualities and repeatability of FDM components, an experimental research has been conducted to examine the impact of each processing parameter. 18 test samples were printed using different processing conditions. It was necessary to measure the measurements of these specimens and compare them to an accurate 3D CAD model to examine the repeatability and the resulting tolerances. To determine the mechanical parameters of each produced sample, the research described here used an ASTM D638 tensile test. A Finite Element Analysis (FEA) model is also included in the paper. Future studies on the combined impacts of processing parameters should include simulating their behaviour under mechanical stresses.

Introduction

There are many different types of advanced manufacturing technologies, and AM is the general word for all of them. By adding material rather of removing it as in subtractive manufacturing methods like milling, the layers are created. G-codes created from 3D CAD models regulate the addition or fusion of materials. Formed by heating a thermoplastic filament to a semi-liquid condition and extruding it via an extruding nozzle, FDM is one of the AM methods that manufactures components layer by layer. In most FDM systems, the filament has a circular cross section and a particular diameter. 1.75 mm and 3.0 mm are the most often utilised sizes. Many benefits occur because of the nature of the FDM process, such as the design flexibility to make complicated forms without the need to invest in dies and moulds, the capacity to generate interior features, which is unachievable using conventional manufacturing processes. Consolidated complicated pieces may reduce the number of assemblies produced using FDM. Reduced lead times and storage and shipping requirements, particularly in applications requiring high levels of customisation, are further benefits of FDM that may be realised across the supply chain [2]. Aside from these drawbacks (such as anisotropic mechanical characteristics, staircase effect at curved surfaces, poor surface quality, the necessity for supports for overhanging portions), FDM technique offers several advantages. Many academics are working to improve the quality of FDM components in order to address these issues. Many methods exist for enhancing the quality of additive manufacturing (AM) and fused deposition modelling (FDM) components, including chemical treatment (3–6), machining (7–8), heat treatment (9), and parameter optimization).

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Analyzing the cantilever beam's temperature

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Abstract—

This study focuses on the structural and modal analysis of carbon steel members subjected to heat loading. Calculations for both the cantilever and the fixed-end components are performed. For members with various cross sections but a same cross section area, deflection and stress were studied. A lack of mechanical forces may lead to heat stresses and deformations in structural components. Temperature variations may have an effect on mechanical components. These findings provide light on how temperature changes affect structure.. The material expands as the temperature rises, which may have an impact on its structural integrity. It's possible that you'll create hazardous designs if you don't consider the implications of constrained parameters. This has a substantial influence on the structural performance of structures exposed to high temperatures. The investigation's primary objective is to measure the deflection and stress in the beam. Analyses are done by using ANSYS, which is followed by real-world testing. ANSYS is used to explore how the structure's mode shape and frequency change as the temperature increases.

INTRODUCTION

Deflection, Mode, Mode shape, and Modal analysis are all included in the index. The expansion of a material due to thermal stress is called thermal expansion.

Temperature variations have an impact on almost all mechanical components. Components expand and contract as a result of temperature changes. Thermal stresses are caused by the restriction of the member's expansion. Temperatures over a certain threshold weaken the structure's elasticity and stiffness. Studying how various sorts of restrictions affect a member's response to temperature and mechanical stresses has helped researchers better understand mechanical structure behaviour. Mechanical and thermal stress are applied to a component, and the results are analysed. It was shown that mechanically loaded members with varying restraining support conditions (ASME SA36) were affected by heat loading [9]. Cantilever and supported beams with a point load under thermal loading are studied in this study. When the temperature changes, researchers examine how a loaded beam deflections and slopes in response.

ANSYS [5] is used to do the FEA analysis. Mechanical stresses are common in real-world constructions because of applied loads and constrained thermal expansion. Structural mechanics theories were used in the development of all analytical formulations. Temperatures may influence the behaviour of structures when they are linked to one another. This basic relationship affects everything in life.

$$C_{Total} = C_{Thermal} + C_{Mechanical} \quad (1)$$

Structural member strain is the sum of the thermal and mechanical strains in the material. Mechanical strain is the single factor that determines the stress in a structure. When thermal stresses are completely restricted, thermal stress will be generated. The member's cross-sectional area will influence its mechanical stress. The bending stress of rectangular and I-section members with the same cross sectional area of 80 mm2 are compared to determine the influence of cross section.

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A Study of the Flexure Behavior and Compressive Strength of Fly Ash Core Sandwiched Composite Materials

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ABSTRACT

This article's core material is comprised of a woven glass cloth and an epoxy matrix/adhesive component." Three different combinations were used to assess the flexural and compressive strength of epoxy and fly ash sandwiched composites. It's not uncommon to see composites with 65-35 percent fly ash with epoxy resin, 60-40 percent fly ash with resin, and 55-45 percent epoxy resin in use (fly ash and epoxy resin). The 60-40 percent composite specimen performed better than the 60-40 percent metal specimen in flexure and compression tests. This paper presents and discusses the investigation's results.

Some of the parameters used to assess this product are epoxy resin, compressive strength, and flexural strength.

Introduction

When two or more chemically different materials are macroscopically united, they form a functional entity known as a composite. Composite materials may have an interface between two or more separate materials. Composites' electrical, thermal, tribological, and environmental qualities must also be taken into account. Composites may be defined as materials that contain a continuous matrix element binding together and forming an array of stronger, stiffer reinforcing elements. Generally speaking, the fibre or particle phases of composites are stiffer and stronger than their matrix phases. Several types of reinforcement have a lower coefficient of thermal expansion (CTE) than the matrix, as well as high wear resistance. Two thin yet sturdy face sheets sandwich a lightweight, substantial core. The most essential attribute of these materials is their lightweight core, which reduces the sandwich structures that have been widely employed in aviation during the last several decades. There are numerous methods to characterise these materials. The material used to construct a structural sandwich has an impact on the final design. An integrated approach to material selection must be taken into account rather than depending just on geometric design.

As their flat surfaces may bear extraordinarily high compression stress without buckling, glass-fibre skins and eco-cores are often employed in aerospace sandwiches because to their high specific stiffness structures. As a general rule, control surfaces should maintain their smoothness even when exposed to high amounts of stress. Over the course of its service life, the sandwich structure will be subject to stress fluctuations regardless of the applied tensile or compressive force. The face-sheet of the sandwich construction is being tested to see how it responds to various loading situations. The major goal is to fulfil ASTM requirements in order to better understand the mechanical characteristics of glass fibre face sheet with an eco-core sandwich composite.

A REVIEW OF THE BOOKS.

The influence of fly ash filler on HDPE mechanical properties was investigated by Ahmad and Mahanwar (2010). Fly ash was used in three different particle sizes. Up to 40% of the fly ash's weight was changed. Injection moulding was used to manufacture test specimens after the composites were made using a twin screw extruder. The qualities of tensile, flexural, and impact strength were examined. Fly ash was shown to boost the tensile and flexural strengths and moduli of the composite. Fly ash concentration more than 10% lowered tensile elongation significantly. Impact resistance decreased by 15% or more when fly ash content increased.

After being multiplied a second time, the value didn't change significantly. Smaller fly ash particles resulted in the highest increases in strength and relative elongation in composites containing these particles. Two layers of 1808 E-glass fabric were sandwiched between 12.5mm thick core materials using vacuum-infusion and hand-layup laminates. It was possible to choose between two different densities of cross-linked PVC foams, two types of extruded PET foam, an extruded polypropylene honeycomb core, an extruded polyurethane honeycomb core, and an extruded polyurethane honeycomb core, as well as one density of SAN foam. Materials in the second and third categories had kerfs cut by knife or saw. Polyurethane foam cores were used in place of scrimping. The initial

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Electromagnetic braking system

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ABSTRACT

A non-contact braking system was proposed to solve the shortcomings of standard braking systems. Upright magnetic braking methods get very little mention in the extensive literature, which is good news for businesses. To build an upright magnetic system, determining the magnetic flux is a critical step. Fluctuating magnetic flux induces eddy currents in the conductor. These currents burn energy in the conductor and generate drag force in order to slow down the movement. Thus, a finite element model is utilised to examine the impacts of air gaps and track materials on magnetic flux density. The model's predicted magnetic flux is within the permissible range, according to the test findings. Based on the results, it will be simpler to develop magnetic braking systems.

Conventional braking methods, friction, heat, and so forth all fall under this umbrella.

Introduction

For heavy-duty vehicles, standard friction brakes may not be enough. There are many techniques to reduce the distance it takes for a vehicle to come to a complete stop, including the use of standard brakes. In the next section, we'll discuss the foundations of electromagnetic brake operation and design. We're working on a method to slow things down for this project. A two-wheeled vehicle may be used in certain situations As a result of its fast speed and cheap maintenance needs, electromagnetic brakes have been deployed as a supplemental slowing mechanism. A plunger and an electromagnetic coil are used in this experiment. The plunger is pushed in the direction of braking by an electromagnetic force. Only electricity can create a magnetic flux in a magnetic field. A hysteresis disc across the field collects the resulting flux. There is a hysteresis disc on the braking shaft. The output shaft may be dragged indefinitely using a magnet attached to the hysteresis disc.

Electro-mechanical brakes (also known as EM brakes) use electromagnetic force to create mechanical resistance and slow or halt motion (friction). Although they were first referred to as "electric-mechanical" brakes, they have now been renamed "electromagnetic brakes" because of the method in which they work. There has been a tremendous rise in the number of applications and brake designs since the mid-20th century when they were extensively utilised in trains and trolleys. Despite these alterations, the system's essential functionality has remained constant. The magnetic force of eddy current brakes, as opposed to the friction of electromagnetic brakes, is used directly to stop the vehicle.

1.1 Theory and main concept

A theoretical work's framework and primary concept Traditionally, magnetic brakes have been the only option for heavy-duty vehicles and equipment. The vast majority of these gadgets rely on magnetism to move one or more mechanical parts. In order to slow down a moving object, a mechanical device may be used. In spite of this, the procedure takes a long time. It is possible to create frictionless brakes using electromagnets. Our goal is to reduce the rotational speed of a bicycle wheel in order to reduce its angular velocity. As a result, a brake that reduces rotational energy is desired. Rotating magnetic fields might hypothetically generate electromagnetic currents. This disc cannot spin because of the heat it generates from these currents (causing the temperature of the disc to increase). Given my reservations, I decided to give this idea a shot. Electromagnets are the most common generator of magnetic fields. An electromagnet may have an effect on the wheel's spinning, therefore I decided to do an experiment. In addition, I was interested in seeing what type of deceleration the intensity of the magnetic field would experience with an increase in voltage. Despite the fact that this test seems to be

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The Characterization of a Laminated Hybrid Composite Made of Hemp, Vinyl Ester, and Carbon Fiber That Is Reinforced with Carbon Nano Tubes

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ABSTRACT

Natural fibres derived from sustainable natural resources have recently shown promise as an alternative to glass, carbon, and other man-made fibres as a reinforcing material for polymer composites. Hemp is the most often used natural fibre because of its low density, inexpensive cost of manufacturing, and good mechanical qualities. Lightweight, strong, corrosion resistant, and close to net forms are all requirements for today's materials, and composites may help satisfy these. Two or more coupled elements, which are not soluble in each other, make up a composite material, which is a structural substance. Reinforcing phases such as fibres, particles, or flakes exist in composites, as do matrix phases such as polymers, metals, and ceramics. In this study, hemp/carbon fibre and carbon nano tube reinforcement and vinyl ester are used as matrix materials to make various composite materials. The following tests were performed on the composites: a density test, a water absorption test, and an impact test. An investigation into the influence of carbon nanotubes on hemp/vinyl ester/carbon fibre hybrid composites found that fibre loading and performance were significantly affected by the inclusion of carbon nanotubes.

The following terms and concepts are used in this paper: Hemp Fiber, Carbon Fiber, Vinyl Ester, Density, Water Absorption, and Impact.

INTRODUCTION

A major breakthrough in the history of material science occurred with the creation of composite materials and its accompanying design and production processes. Developed for specific applications, composites are materials with unique mechanical and physical characteristics. Materials have a wide variety of benefits over traditional materials, including tensile strength, impact strength, flexural strengths, stiffness, and fatigue properties. Aerospace and commercial mechanical engineering applications, such as machine components, automobiles, combustion engines, mechanical components such as drive shafts, tanks, brakes, pressure vessels and flywheels, thermal control and electronic packaging, railway coaches and aircraft structures, use them widely due to their numerous benefits. A composite material is created by mixing together two or more distinct materials, each with its own unique qualities. Reinforcement, a strong load-bearing substance, is included into the composite material (known as matrix). Reinforcing fibers/particles in a composite improve its mechanical properties such as tensile strength, flexural strength, impact strength, stiffness, etc., while the matrix's primary function is to transfer stresses and protect reinforcing fibers/particles from mechanical and/or environmental damage. Composites may be categorised in a variety of ways. Metal matrix composites, ceramic matrix composites, and polymer matrix composites may all be subdivided into three groups based on their matrix materials. Each form of composite material may be used for a variety of different purposes. Metal matrix composites are made using metals such as aluminium or copper as the matrix material. Superior electrical and thermal conductivities, as well as excellent ductility and strength, are among the characteristics of these materials. Due to the low thermal expansion coefficient of the matrix, these materials have good dimensional stability and can endure high temperatures. Reinforcements have a high elastic modulus, which gives them a high level of rigidity. Ceramic matrix composites are formed when the matrix material is ceramic. Inorganic ceramic materials include bricks, pottery, oxide, nitrides, and carbides of silicon, aluminium, zirconium, and other metals and elements. They are often nonmetallic and subjected to high temperatures during processing.

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Analyses of the design and structure of a beam that is simply supported

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Abstract –

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

Introduction

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

Measuring Weight and Measurement

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

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

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

Calculating the stress level

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

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

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

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

$$F_b > f_b$$

AND

$$F_v > f_v$$

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

Other Considerations

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

When building a beam, think about structural design tools. Engineers may use a number of

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Analysis and Design for the Mechanical Engineering Existence Cycle

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Abstract:

This is part two of a three-part series on mechanical engineering layout. The first part of this section focused on the use of laptops in the design process. Layout guide analysis, manufacturing layout, and language, representation, and setting are all included in this section. Each location's most recent research is used to determine the most recent full-size accomplishments in that area. The six major subjects are summarised below, along with some unanswered questions.

INTRODUCTION

In the journal Research in Engineering Design, this is the first of a two-part review of mechanical design research. The next exams will focus on engineering design sub-topics. The lectures are open to all engineers and are meant to keep them abreast of the most recent advancements in the field. Putting discoveries in context helps researchers prepare for the future. If you're looking for articles about engineering design, here is a good place to start. Evaluations like this must have a narrow focus. Although this review's objective is to provide an overview and point out further resources, if you have time, please read all of the articles. Despite our best efforts, we will be unable to include all potential applicants on our short list. If we misinterpret or don't understand anything, we might make a mistake. Please accept our heartfelt apologies for any trouble this has caused you, our valued customers. The scope is limited in certain areas. Mechanical engineering is all about designing goods, equipment, and structures. Geometric modelling, architectural design, manufacturing, and expert systems are only treated when they are directly relevant to mechanical system designs. Since commercial computer-aided design (CAD) systems are only now beginning to combine the wide range of study topics indicated here, we haven't even attempted to include them in our analysis. In this review study, the vast majority of the research is conducted in the United States. The practise of specifying work locations outside of the United States has not been prevalent. It isn't addressed—unless mechanical design studies concentrate on highly specialised technical areas (such as mechanisms and heat exchangers) that are simple to apply elsewhere. This review of the topics breaks down design philosophy and practise into six categories. This list includes the following: The development of products and services may be described through models. The use of prescriptive design paradigms is becoming commonplace. Computer simulations are used to construct design process models. Working with a broad range of languages, representations, and settings is a challenge. Analyzing a situation may help you make better decisions. This section focuses on serviceability, scalability, and manufacturing. A study may fall under more than one of these headings in certain situations. That being said, we've done all possible to make our readers aware of the research's current position. Hope this helps. Of the six topics mentioned above, three were addressed in the first section. A look at recent developments in the subject is included in this section.

One must be concerned with words, images, and visual representations in the design context.

Two-way communication is critical in today's multilingual and multicultural society.

Formal representations in circuit design may be used to capture important characteristics of the object being generated.. The absence of adequate mechanical representations is a major problem in mechanical engineering design studies. Computer-based mechanical geometry models have undergone a great deal of effort over the last fifteen years to ensure their validity and reliability. Mechanical designs, other from the kinematic linkage design, lack a detailed description of their physical and functional properties. According to the following,

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A Look at Institutional Productivity in Indian Physics Research as Measured by Publication Counts

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ABSTRACT

The study examines the broad characteristics of India's physics publications output, its subject areas of strength and also the extent to which country's research pursuits have technological orientation. The study is based on contributions by Indian institutions and scientists as indexed in *INPSEC*-Physics 1998. The study finds that India's physics- related contribution is significantly high (86 per cent) in Science Citation Index (SCI)- covered journals, of which 26.4 per cent was in high-impact journals (IF = 1.5). Its contributions in condensed matter physics and materials science are significantly strongand also have technological orientation. The study also shows that there are wide differences in the quantity and quality of publications output across various broad and narrow subject fields under physics. The physics research activity is led by a select number of institutions in the country. Out of 435 institutions participating in physics research, just 20 had accounted for 50 per cent of the total output. The academic sector, being the biggest of all the sectors in terms of participating institutions, made the largestcontributions to the physics output, followed by R&D sector, industrial sector, and government sector. However, the share of academic sector in high-impact journals was at second rank; the R&D sector topping the list. R&D sector also exceeds all other sectors in terms of publication output per institution.

Keywords: Physics, physics industry, physics research, institutional performance

INTRODUCTION

Physics is known to have made several contributions to the economy of many nations.It has been harbingering of the change, but it has failed, till date, to get the acknowledgementit deserves for its role and contributions. This might be because physics has never been instrumental in bringing about any industrialactivity directly or in generating any industry on its own. There is no industry like 'physics industry' in the economy of any nation. Physics has always served as a bridge between knowledge creation and wealth generation, particularly

in high-tech industry. The explosive growthof information technology (IT), microelectronics, and telecommunications has its roots in condensed matter physics, materials physics, semiconductor physics, and fiber optics. The knowledge of physics has been instrumental in the development of enabling technologies for IT hardware, information processing, information transmission, and storage. The semiconductor industry, effectively utilizes the knowledge of solid-state physics, chemicalphysics, plasma physics, materials physics for several applications. Many other industriesare equally dependent on the developments in physics[1-2].

By utilizing knowledge in physics, some industries have been able to make landmark contributions to the national economy of the country, influencing especially its prosperity and human life in meeting its needs. For example, condensed matter physics finds applications in medicine (x-rays, MRI), shelter (composites in construction materials), security(weapon systems), entertainment (films, radio, television-flat panel display), communications (pervasive-transistor, integrated circuits, lasers, fibers), transportation (smart cars,

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Research Technique Implemented on Activities of The executives

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Abstract:

Behavioral operation stems from the fact that humans are not rational as typically assumed in the traditional operations management theories. Behavioral operation management is the emerging and promising field in the domain of operations management. Being an emergent stream the researchers have experimental focus while dealing with behavioral operation management. This paper is an attempt to consolidate the published work on behavioral operation management experimental research methodologies and explain various options available for researchers. Also this paper proposes guidelines for selecting the appropriate experimental research methodology. Various experimental studies falling under the umbrella of behavioral operation management are vignettes, process simulation, laboratory simulation, natural experiments and mixed experimental studies. The problem at hand determines the type of experimental study. Though there are several pros and cons of using a particular design, the mixed experimental studies have found to be more acceptable to the researcher compared to other studies

1. Introduction

Behavioral operation management (BOM) is defined by Bendoly and Eckerd(1) as "A multidisciplinary branch of operations management (OM) that explicitly considers the effects of human behavior on process and system dynamics, influenced by cognitive biases and limitations, social preferences and perceptions of cultural norms. Conversely this domain also concerns itself with the effect of process and system dynamics on human behavior, hence viewing human behavior as critical in not only its direct and moderating effects but also in its mediating role between operating policy change and connected outcomes." BOM is a relatively new discipline in the operation management area. OM as a discipline has always assumed that human are rational and always works in self-interest (2). But the reality is different. Lot of OM theories have been challenged on their false assumption ground and the applicability in the real world where human is not behaving in a rational way. In order to test and refine the traditional OM theories and practice after considering the human as irrational entity, a new stream of research has developed which is known as BOM.

As evident from the literature, any developing stream heavily relied on the experimentation methodology. The BOM is no exception to this. There are two important aspects of the BOM, first one is the selection of the suitable research methodology and is related to the balance between the typical modelling studies vis-a-vis empirical studies. The second aspect is the multidisciplinary nature, encircling various disciplines such as decision science, psychology, OB and management.

This paper focuses on the types of experiment studies used in BOM, in order to trace the development of the stream and envisage the future direction. In particular the paper tries to answer the following questions

1. What is BOM and how it has evolved from operations management?

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Strong Waste Administration: Impacts of the Pandemic

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Pandemic COVID-19 has sparked worldwide alarm and sparked social and economic worries, all of which will have an impact on the environment. As part of this ongoing natural experiment, the present study examines how various developed and developing nations process and dispose of municipal solid waste (MSW). Research papers from a variety of fields, government and multinational agency publications, as well as news articles all contributed to the compilation of the material in this document. Despite the fact that little is known about MSW management during pandemics, this study proposes a worldwide paradigm for MSW management during the COVID-19 epidemic and evaluates many elements of MSW management. On the subject of waste treatment and disposal, we'll discuss the impact of increased medical waste on the current system. When the present pandemic is over and the cleanup begins, waste management will be difficult, but not impossible. The research provides recommendations for the treatment and disposal of MSW as well as the scope of future effort to achieve sustainable waste management.

Introduction

SARS-CoV-2 is the third coronavirus to develop in the previous two decades, following the SARS-Cov-1 epidemic in 2002 and the Middle East respiratory syndrome coronavirus (MERS-CoV) outbreak in 2012. (1). COVID-19 (coronavirus disease 2019) has been confirmed in 3,677,165 confirmed positive cases globally at the time of this publication. Hundreds of thousands of individuals have been placed under quarantine throughout the world in an effort to cut down on the spread of disease (2). The coronavirus epidemic has prompted some nations to implement job creation initiatives aimed at combating unemployment. At a time when many people find it difficult to think about possible negative repercussions, it is critical to keep in mind that climate change is another serious danger to human prosperity. Using COVID-19

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The Chromosomal DNA Position of Amplified Genes Affects Recombinant Protein Production and Gene Stability

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Abstract :

Previously, we developed a simple and rapid approach for generating a stable and highly prolific CHO cell line that has been amplified using genes. Increased concentrations of methotrexate (MTX) resulted in high and consistent specific growth and production rates for gene-amplified cell populations. Gene-amplified cells' phenotypic seemed to be influenced by the chromosomal DNA region in which the amplified gene was located. Over the course of our long-term selection process, we hypothesized that a variety of gene-amplified cells would emerge. We extracted gene-amplified clones obtained from gene-amplified cell pools to better understand how gene-amplified cell pools respond to a stepwise rise in MTX concentration. Recombinant protein production, the stability of amplified genes, the location of amplified genes were compared across isolated clones. This led to the discovery of more stable and prolific "telomere-type clones," which had an amplified gene situated near the telomeric region. The chromosomal DNA of telomere-type clones included over 100 copies of amplified genes. It's not uncommon to see fewer than 10 copies of amplified genes in a big number of additional clones. While in the absence of MTX, in other kinds of clones, amplified genes quickly depleted from chromosomal DNA after prolonged culture.

Introduction

eukaryotes have an abundance of genes that may be repurposed for many purposes. 1-3, the formation of drug resistance in tumor cells and certain human parasites (4, 5) and the maturation of cancer cells are all examples of this process (4, 5). Furthermore, the gene amplification phenomenon has been used to produce recombinant drugs by employing cultivated cells (6, 7). Until today, the mechanics of gene amplification were completely unknown. Various host cells, including E. coli, yeast, and mammalian cells, have been employed in commercial operations to create recombinant medicines. EPO, granulocyte colony-stimulating factor (G-CSF), and other antibodies have been produced in commercial procedures using recombinant expression systems (6, 7). Recombinant protein manufacturing employing mammalian cell lines has yet to be fully established in an industrial setting. General methods for the development of productive cell lines have not yet been discovered as well. There was also no mention of alternative effective, rapid, and easy selection procedures, such as flow cytometry or cell affinity separtion. Gene amplification methods using recombinant mammalian cells are commonly used to increase the poor productivity of mammalian cells while producing glycoproteins (6-8). Dihydrofolate reductase (dhfr) gene amplification method in the Chinese hamster ovary is one of these gene amplification systems (CHO)

Table 1. Rates of MTX Concentration Increase Depending on the Pattern of Increase

stepwise selection pattern	specific growth rate [h^{-1}]	specific production rate [10^{-10} g $cell^{-1}$ h^{-1}]
rapid increase mode[a]	0.019	1.0
gradual increase mode[b]	0.036	1.6

[a] 0 → 100 → 1000 nM MTX. [b] 0 → 50 → 200 → 500 → 1000 nM MTX.

in the majority of cases, the cell line (8, 9). Selection methods for recombinant CHO cell lines that can consistently generate the necessary recombinant proteins are critical for the use of gene

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The Fertilization-Related Chemical Properties of Heavy Metal Elements in Coils and Their Potential Impact on Environmental Safety

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ABSTRACT

The chemical features and ecological security risk analysis of heavy metal elements in a given soil induced by fertilization were offered as a means of examining the effects of fertilization on soil chemical characteristics and ecological security. Ni, V, Cr, As, Cd, Pb, Zn, and Hg levels in 1,065 surface soil samples from a city in the southwest agricultural region were studied. Using geographical analysis and multivariate statistics, we were able to better understand the geochemical characteristics of distribution and potential major sources of these heavy metals were addressed. The findings demonstrated that there are three distinct groups that eight different heavy metals may be placed into. The first group consisted of elements with a lower total content: Ni, V, Cr, and As. the significance of the backdrop in Beijing. Further, natural variables, such as soil parent materials, had a significant role in the dispersion. Formation. The second group consisted of Cd, Pb, and Zn, all of which had an average level that was greater than the reference value. Also, the where residential areas have the greatest average content.

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The Potential of Phenolic-Rich Medicinal Plants as Antioxidants, Diabetic and Hypertension Inhibitors

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ABSTRACT

Both Turkish and Traditional Chinese Herbal Medicine (TCM) make extensive use of Veronica (Plantaginaceae) and Schoenoplectus due to their distinctive chemotaxonomic and photochemical importance in the treatment of tonics, incense, diuretics, expectorants, restoratives, and respiratory diseases. They are also both very useful in the treatment of infectious and metabolic disorders. Is Research analysis of the two medicinal plant species Veronica biloba and Schoenoplectus triqueter (L.?) Palla; extraction was done by means of Determination of free and bound phenolics, using Soxhlet and maceration techniques. Extracts from the biological screening evaluation Type 2 diabetes (alpha-glycosidase and alpha-amylase), angiotensin-converting enzyme (ACE), phenolic antioxidants, and angiotensin-I converting enzyme modified assays were used to measure potential. 50% Inhibition of Angiotensin Converting Enzyme (ACE) in Veronica Biloba was found to have an IC50 of 210.68 g/mL, whereas Schoenoplectus triqueter (L.) Palla had an IC50 of 229.40 g/mL. Meanwhile The bound phenolics of Veronica biloba (IC50 219.66 g/mL) and its water block alpha-amylase by 50%, which is indicative of type II diabetes. The -glycosidase activity by free phenolics was measured to be most effective at an extract IC50 of 110.09 g/mL.

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The role of plant processing for the cancer preventive potential of Ethiopian kale (Brassica carinata)

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ABSTRACT

Ethiopian kale (Brassica carinata) is a major crop for horticulture in many regions of East and Southern Africa, where it is grown for its green vegetables. Secondary plant metabolites have been found in the leaves, according to reports. However, there is a paucity of scientific evidence to support their health advantages.

The study's goal was to see whether B. carinata may prevent cancer in a human liver in vitro model by examining the effects of processing on secondary plant metabolite patterns and immunogenicity.

As a result of this study's design, B. carinata was grown under controlled circumstances and then processed either raw or cooked after harvesting. Ethanolic extracts of raw or processed B. carinata leaves were tested for their anti-genotoxic, anti-oxidant, and cytostatic properties on human liver cancer cells (HepG2). A variety of glucosinolates, including their breakdown products, phenolic compounds, carotenoids, and chlorophyll content, were analysed for their chemical properties.

B. carinata extracts concentrations were increased after pre-treatment. As shown by electron paramagnetic resonance spectroscopy, aflatoxin-induced DNA damage was decreased, reactive oxygen species were reduced, and Nrf2-mediated gene expression was in turn induced. Cytostasis was also aided by increasing extract concentrations. Secondary plant metabolite concentrations were significantly altered as a result of processing. Some endpoints tested showed an increase in protection against a variety of processing meth odologies, whilst others saw a reduction.

We conclude that B. carinata has cancer-preventive properties as shown by its ability to protect human liver cells against aflatoxin in vitro. B. carinata should be supported as part of chemopreventive strategies to reduce the occurrence of aflatoxin-induced illnesses in general.

Introduction

There are the most chronically malnourished individuals in Sub-Saharan Africa [1] than anywhere else in the world. A variety of factors contribute to Africa's severe food insecurity [2], but agronomic limits and limitations imposed by regionally suitable processing and cooking methods are particularly important [3,4]. African leafy vegetables (ALVs) have long been prized for their nutritious content and