



MATHEMATICS FOR TYPHOLYTIC CHILDREN

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Abstract:

“Learning mathematics is a highly sequential process” says Dr Albrecht. It is found that compare to sighted children, there is a poor achievement in mathematics among students who are visually impaired. Then the question arises why such a difference in achievement appears when the school provides more or less uniform instructional and environmental facilities? Does this difference depend upon their style of learning, thinking? The main objective of this study is to examine the relationship between the logical and mathematical abilities of children with respect to their Learning Styles in sighted and Typholytic children. For studying the cognitive behavior of children the researcher has selected, and administered the tool: The Barsch Learning style Inventory which could be equally suitable to both visually challenged and children with sight is administered to collect data. The study reveals that, in case of typholytic children concept development and perception mostly occur through auditory and tactile –kinaesthetic learning styles Hence it may be suggested that mathematics becomes accessible for all learners at all levels only if their learning styles and needs are not neglected.

Keywords: Learning, logical and mathematical abilities for typholytic children

Introduction:

It is found that there is a poor achievement in mathematics among students who are visually impaired .There is a slow Cognitive concepts development in less visually challenged children due to the lack of vision or decrease the quantity and quality of visual experience which act indirectly on the feeling of insecurity, fear the independent exploration of the environment [1][3]. The main reason for this is that a student who is visually impaired will understand the concept in pieces and then perceived as a whole. Descriptions such as direction, quantity, shape etc in mathematics is very visual in nature can be best explained visually. Also understanding of spatial, directional concepts, concepts of conservation of mass and volume is often delayed in visually impaired children. A major reason is that teachers of visually impaired students often lack skill and knowledge in the area of mathematics instruction. Many teachers lack confidence in their ability to teach the reading and writing of Braille symbols in mathematics this becomes a major issue. In visually impaired students a new specific learning style is developed. The visually impaired student has a concrete concept of the world. These students“ unique perceptions of the world are



UPGRADE THE STANDARD OF ACADEMICS WITH STATISTICS

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Abstract:

Statistical Tools enables better control of processes in planning, design, distribution and Contributes to greater flexibility. This paper gives an overview of the research in the area of statistical tools implementation in education. The overall objective of this paper attempts to theoretically conceptualize and principles of statistics involved and how it can be used to improve the quality of an academic institution. Most of the principles of statistics can be implemented in the area of education and training. This paper highlights the essence of statistical tools and explains how higher education institutions can improve the quality by implementing statistical principles. This may result in a process of teaching and learning, which particularly emphasizes gaining good results in examinations. Statistics s a vision, which the educational institution can only achieve through long-term planning, by drawing up and implementation annual quality plans, which gradually lead the firm towards the fulfillment of the vision.

Keywords: Higher Educational Institutions, Technical Institutions, Schools, Strategic Management, Quality, Statistical Tools.

Introduction:

Academic institutions offering higher education in general and those offering professional education in particular are undergoing a process of change similar to what business organizations have undergone a few decades ago when they were confronted by competition. The speed of change is driven by multiple factors. Demands from industry, information-age mind set of the students, increased competition and the renewed quest among academic community are some of the factors driving this change. To ensure that higher education, particularly professional Education is able to deal with market and technological changes coupled with global requirements, it is important.

For institutions offering higher education to use appropriate curricula, course materials and teaching methodologies that are not only up-to-date, but also effective from learner's point of view. Statistical tools help in focus on customers and all interested parties, teamwork of all employees in the organization and focus on processes supported by continuous improvement and learning. The application of statistics to educational institutions through measurement, analysis, achieving student satisfaction, continuous improvement and upgrading of the system leads to the excellence of such organizations. Compared to conventional concepts of education, it have great advantages



PIXEL BASED ADVANCED SKIN DETECTION

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Abstract:

For face recognition in photos, skin detection is an essential pre-processing step. Finding a trustworthy yet effective approach to identify the skin region(s) is a difficult undertaking. In this study, we presented a novel, straightforward, and effective method for skin identification based on image segmentation of various colour spaces and a straightforward clustering methodology (K-means) for grouping related pixels in an image. The following three input characteristics for K-means are used: a) two components from two separate colour spaces (Hue, Cr, and Cb); b) pixel positions on an image; and c) an approximate estimate of the skin pixels produced via skin-color based detection. On human photos of various ethnicities with a simple background and high illumination, our method yielded encouraging results. Since no training data is needed, the approach has an extremely cheap computational cost. The method is suitable as a pre-processing step for some supervised method for sophisticated skin segmentation and detection, according to the results.

Keywords: Image Enhancement, Adaptive Histogram, K-means Clustering, and Skin Detection.

Introduction:

In order to make an image useful for a variety of applications, such as those in the fields of digital photography, medicine, geographic information systems, industrial inspection, law enforcement, and numerous other digital image applications, image enhancement is one of the crucial requirements in digital image processing. The standard of subpar photos is improved by the use of image enhancement. This paper's main goal is to better image segmentation and digital image quality utilizing adaptive histogram equalization and advanced clustering methods. The Histogram Equalization (HE) method of image enhancement may be simple and efficient. However, it frequently varies the image's mean brightness to the midpoint of the permitted range, making it a poor choice for a consumer product [1].

While maintaining the original brightness is necessary to prevent irksome artifacts. Diverse techniques have been developed to maintain brightness and improve picture contrast, but some of them produce undesirable artifacts including intensity saturation, over-enhancement, and noise amplification. Adaptive histogram equalization techniques are used and contrasted with classic histogram equalization in this paper [2].



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AN ANALYSIS OF DIGITAL MARKETING

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Abstract:

In a market environment that prioritizes the needs of its customers, consumer purchasing patterns are shifting more quickly. Consumer behavior varies depending on the product, price, features, quality, packaging, buying habits, customer status, generation, and age, among other factors. The hardest group to communicate with is the youth, though. Because they largely follow the rhythm of fashion and taste according to the changing times, the shifting preferences of the modern client have an impact on the purchase pattern. As a result, marketers spend excessive amounts of time and money on market research each year to discover and forecast the shifting consumer behavior. The marketer in the retail sector is currently facing numerous issues as a result of digital marketing. The modern generation is more intrigued by online shopping than by traditional retail. Due to the pressure of the current generation's buying habits, marketers are compelled to develop the novel manner of selling. The primary issue in this study is "Digital marketing and its Effect on purchasing behaviour of Customers," because customer behavior and purchasing patterns have a bigger impact on consumer behaviour. The study finds that although the majority of today's consumers have access to digital media, they are unaware of how to use it to its fullest potential.

Keywords: Digital marketing, Customer, purchasing behavior of Customer.

Introduction:

What is Digital Marketing?

All marketing initiatives that make use of technology or the internet fall under the category of digital marketing. To engage with present and potential customers, businesses use digital channels including search engines, social media, email, and their websites. 'Online marketing,' 'internet marketing,' or 'web marketing' are other terms for this. Utilizing a variety of digital strategies and platforms to connect with customers online, where they spend a significant amount of time, is the definition of digital marketing. A wide range of strategies fall under the category of "digital marketing," including



Graph Theory: A Systematic Review

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Abstract:

It is a subset of the philosophy of graphs. The theory of severe graphs studies maximal or minimal graphs that obey a certain property. A Graph $G(V, E)$ is said to have a prime labeling if its vertices are labeled with distinct integers $1, 2, 3, \dots, |V(G)|$ such that for each edge xy the labels assigned to x and y are relatively prime. A graph admits a prime labeling is called a prime graph. We investigate the prime labeling of some H-class graphs. Many other classes of graphs have been studied as well, several of which are constructed from trees. If we let P_n denote the path on n vertices, then the Cartesian product $P_n \times P_m$, where $m \leq n$, is called a grid graph. Some results about prime labeling of grid graphs can be found in.

Keywords:

Graph, H class, prime graph, ladder

Introduction:

A simple graph $G(V, E)$ is said to have a prime labeling (or called prime) if its vertices are labeled with distinct integers $1, 2, 3, \dots, |V(G)|$, such that for each edge $xy \in E(G)$, the labels assigned to x and y are relatively prime [1].

We begin with listing a few definitions/notations that are used.

- (1) A graph $G = (V, E)$ is said to have order $|V|$ and size $|E|$.
- (2) A vertex $v \in V(G)$ of degree 1 is called pendant vertex.
- (3) P_n is a path of length n .
- (4) The H-graph is defined as the union of two paths of length n together with an edge

Joining the mid points of them.[2] That is, it is obtained from two copies of P_n with vertices v_1, v_2, \dots, v_n and u_1, u_2, \dots, u_n by joining the vertices $v_{(n+1)/2}$ and $u_{(n+1)/2}$ by means of an edge if n is odd and the vertices $v_{(n/2)+1}$ and $u_{n/2}$ if n is even.



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IMPACT OF ORGANIZATIONAL CREATIVITY AND INNOVATION ON ENTREPRENEURIAL SUCCESS

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Abstract:

This research aims to look into the impact of innovation and creativity on the growth of entrepreneurship. Prior to doing so, we combine the knowledge from several literary works on creativity, innovation, and entrepreneurship derived from Joseph Schumpeter's viewpoints, theories, and studies on the growth of innovation and entrepreneurship. The study's design was one of a survey. Using Yemane sample size calculation techniques, a valid sample of 257 participants had an impact on the study. For data analysis in the study, the Ordinary Least Squares method and the ANOVA Test were used. In this study, we accept hypotheses H2 and H5 because of their mutually substantial effects on the measured variable, but we reject hypotheses H1, H3, and H4 because of their negligible effects on the independent variable (entrepreneurship development). The most important factors both technological development and strategies are discussed in this study.

Keywords: Creativity, Innovation, Entrepreneurship, Development

Introduction:

Innovation, creativity, and the current global business climate are essential components in building and maintaining strategic advantage. The new style of thinking among managers and economists from nations with a developed market economy and a fresh understanding of economic opportunities are two of the key causes of this rejuvenation. However, innovation cannot be sustainable unless it is in alignment with the three pillars of the triple bottom line: the economic, social, and environmental facets. In this context, a sustainable environment supports the creation of innovations and knowledge while also transforming the ecology of knowledge [4]. Discussions on creativity and innovation are pertinent in research work because they are viewed as key components in the development of competitive advantage. Regardless of a company's market reach, innovation has nearly become a need in today's global business world.

In order to remain competitive, grow, and take the lead, businesses must be able to identify problems



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INDIAN CAPITAL MARKET: SEBI'S ROLE

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Abstract:

When East India Company stocks were traded, the Indian capital market was established. Since its founding in the early 1900s, the Indian capital market has advanced significantly. The Securities and Exchange Board of India, or SEBI, was established by the SEBI legislation of 1992 to oversee the country's stock markets. Protecting investor interests and expanding and regulating the Indian securities markets are among SEBI's main duties. In 1999, SEBI was created. India might catch up to other significant global capital markets in terms of fairness and openness of the market with a fresh round of SEBI reforms. It must thoroughly reexamine its internal organization and functioning in order to make this viable. SEBI must strike a balance between the advantages of market expansion and the costs of regulation. The global economic downturn, depressions, unethical behavior, and other capital market frauds have damaged investors' confidence in the Indian capital market. SEBI's job as a regulator and market development has gotten harder as a result of the financial markets' quick globalization.

Keywords: Capital Market, India, SEBI, Regulations

Introduction:

The capital market is a place where long-term borrowing and lending occur. Equity and debt are traded on the capital market. The phrase "primary market" describes the long-term movement of capital from the surplus sector to the corporate and public sectors (through primary issues) as well as to banks and other non-bank financial intermediaries (via secondary issues). There is a market for existing securities called the secondary market. The primary market produces capital information through primary issues, but the secondary market solely supports the liquidity and marketability of outstanding debt and equity instruments. The responsibility of regulating and overseeing each and every area of the financial industry is exceedingly challenging for the authorities. SEBI has been found to have contributed significantly to the methodical implementation of effective surveillance



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INDIA'S ROAD MAP TO SUSTAINABLE GROWTH: MAKE IN INDIA

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Abstract:

India is the second-largest population in the world, after China, although its economy is primarily dependent on agriculture rather than other industries like industry and services. According to professional studies on the economic development of emerging nations, the services sector has the potential to increase income and employment possibilities in addition to providing a return on investment. The agricultural industry does not provide a high rate of return on investment, much like the service and industrial industries. As a result, the Indian government is looking for ways to strengthen the service and manufacturing sectors in order to enhance GDP (Gross Domestic Product) and GDI (Gross Domestic Income). These two terms sum up the state of any nation's economy and provide context for the growth and prosperity of that nation. The Indian government launched the Make in India project to convert the agricultural-based economy into a dependent industry in order to achieve these objectives.

Keywords: Make in India, Manufacturing, Indian Economy

Introduction:

The NDA (National Democratic Alliance) government's signature initiative, Make in India, aims to develop the domestic manufacturing sector and entice international capital to the Indian economy. In his Independence Day speech on August 15, 2014, Indian Prime Minister Mr. Narendra Modi used the catchphrase. A month later, in September 2014, he launched the Make in India campaign, with the goal of reviving manufacturing businesses and highlighting key sectors in India amid growing worries that most business people are leaving the country due to its low ranking in rankings for the ease of doing business. [1]

The goal of the Indian government's development plan has been to create a socialistic social structure



Mathematics Phobia among Students

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Abstract:

Mathematics is one of the compulsory subjects at every level of education, and mathematics grades also serve as a determining factor in studies. Math Phobia may be a feeling of tension, apprehension, or fear that interferes with math performance. National Council of Teachers of Mathematics (NCTM) (1989, 1995) suggests teachers to accommodate for different learning styles, create a variety of testing environments, refrain from tying self-esteem to success with math, and emphasize the importance of original, quality thinking rather than rote manipulation of formulas. The formation of students' cognitive abilities is influenced by several factors, including internal factors such as mathematics anxiety and self-concept. This study aims to explore the cognitive abilities in relation to mathematics anxiety and self-concept among students. The study employed an ex post facto research design, using questionnaires on mathematics phobia and selfconcept, as well as a cognitive ability test administered to a sample of students in an educational institute. Questionnaire Method was used to analyze the data. The results of this study indicate that: math phobia has a significant negative effect on cognitive abilities, partially; simultaneously, math phobia and self-concept has a positive and significant effect on cognitive abilities.

Keywords:

Mathematics, knowledge, phobia, remedies, cognitive atmosphere

Introduction:

Students often develop math phobia in schools, as a result of learning from teachers who are themselves suffering from math phobia. Such teachers usually fall back to teaching exclusively from the textbook, relying on memorizing facts, and employing only drill and practice to reinforce the lesson. This phobia is caused by various factors such as academic pressure, lack of understanding of concepts, or negative experiences in Mathematics [1] In addition; students' self-concept plays an important role in determining their actions. Students with low self-concept in mathematics tend to feel inadequate and unsure of their ability to master the subject, which can affect their cognitive abilities. [2] Ability cognitive child different and therefore it is important to pay attention to providing appropriate approaches to reduce pressure and enhance self concept.

Mathematical Anxiety:



Minimum Support Price in India

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Abstract:

The data revealed that only 23.72 and 20.04 per cent of farmers in the rural agricultural households in India are aware of MSP of crops grown by them in Wheat and rice respectively. From the results, it is inferred that MSP needs to be backed up by effective procurement coupled with awareness creation by extension system to enable more number of farmers to take benefit of this safety net. We have also explored the relationship between farmers' awareness about MSP central government declared in the parliamentary house that, by 2022 Indian farmer's income will be double and three (3) bills has been passed, from that day onwards farmers have been protested these bills to take back. Know question is when someone wants to improve or double your income than why they against it? Now the question is we needs know the pros and cons of these bills and also we will come to know that why Farmers protest these bills

Keywords:

MSP, Central Government, Farmers, three bills, Protest

Introduction:

The MSP is a minimum price guarantee that acts as a safety net or insurance for farmers when they sell particular crops. These crops are procured by government agencies at a promised price to farmers and the MSP cannot be altered in any given situation. The concept of MSP, therefore, protects the farmers in the country in situations where crop prices fall drastically. Wheat and rice are among the top crops that are procured by the government at MSP from the country's farmers. A total of 22-23 crops are procured under MSP. The MSP is set by the central government for select crops, based on recommendations it receives from the Commission for Agricultural Costs and Prices (CACP). The CACP is tasked with determining the MSP, which is somewhat based on a formula derived from the Swaminathan Committee, which was a government-formed panel to resolve issues faced by farmers. The MSP-based procurement by the government has its origin in the rationing system introduced by the British during World War II. A department of food came up in 1942. After Independence, it was upgraded into the ministry of food. Those were the times when India faced acute food shortages. When the Green Revolution started in the 1960s, India was actively looking to shore up its food reserves and prevent shortages. The MSP system finally started in 1966-67 for wheat and was expanded further to include other essential food crops. This was then sold to the poor under



Nanotechnology: Applications, Challenges, and Future Directions – A Review

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Abstract:

Nanotechnology has emerged as a highly promising field with the potential to revolutionize various aspects of science, technology, and medicine. By manipulating matter at the nanoscale, nanotechnology offers unique opportunities to design and fabricate materials and devices with exceptional properties and functionalities. This abstract provides an overview of nanotechnology, key principles, and potential applications. It explores the current state of nanotechnology research, discussing breakthroughs and challenges. The unique properties of nanomaterials, such as large surface-to-volume ratios and quantum effects, underpin their distinctive behavior and enable novel functionalities. Engineered nanoparticles, nanofibers, and nanocomposites exhibit tailored properties for specific applications, ranging from improved mechanical strength and thermal stability to enhanced catalytic activity and sensor sensitivity. Nanoscale characterization techniques, including electron microscopy, spectroscopy, and manipulation tools, enable precise observation, analysis, and manipulation of nanoscale structures.

Keywords:

Nanotechnology, Nanoscale, Nanomaterials, Electronics, Energy

Introduction:

Nanotechnology, the science and engineering of materials and devices at the nanometer scale, has gained substantial attention in recent years due to its immense potential in diverse fields such as electronics, energy, medicine, and environmental sustainability. At the nanoscale, materials exhibit unique properties and behaviors, distinct from their bulk counterparts, owing to quantum and surface effects. This characteristic allows scientists and engineers to manipulate matter with precision and create structures and functionalities that were previously unimaginable. The principles of nanotechnology are rooted in the ability to control and manipulate materials at the atomic and molecular level [1]. Techniques such as bottom-up assembly, top-down fabrication, and self-assembly are employed to construct nanostructures with specific properties and functions. These nanostructures can be engineered to exhibit enhanced mechanical, electrical, magnetic, and optical properties, making them highly desirable for a wide range of applications. In the realm of electronics, nanotechnology has enabled the development of smaller, faster, and more efficient devices. Transistors and integrated circuits have continued to shrink in size, reaching nanoscale dimensions, which has driven the advancement of computing technology. Nanomaterials, such as carbon nanotubes and graphene, possess exceptional electrical conductivity and mechanical strength, making them potential candidates for future electronics and energy storage applications. The medical field has also been significantly influenced by nanotechnology. Despite the numerous advancements, challenges persist in the field of nanotechnology. Safety concerns regarding the potential toxicity of nanomaterials and their impact on human health and the environment require careful evaluation and regulation. Additionally, scalability and cost-effectiveness of nanofabrication techniques pose hurdles for large-scale commercialization.

Nanotechnology Applications and Benefits:



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NUMBER THEORY IN REALISTIC FIELD

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Abstract:

Number theory is very useful in everyday life. Math can help us do many things that are important in our everyday lives. Here are some daily tasks for which it is important like: Managing money, shopping for the best price, Preparing food, figuring out distance, time and cost for travel and many more. The most important application of number theory is that it is the key foundation of cryptography. Our strong encryption algorithms and systems have developed because of the impetus provided by number theory. For example, your data cannot be easily accessed by anyone because of the strong encryption system. Moreover number theory is useful in the study of binary codes and other related concepts. This is the main real life applications of number theory. Other than those, there are myriad of applications which are useful for applied mathematicians and physicists. For example, the q series is extremely useful in the study of strings. Then super symmetric functions like the mock theta functions and theta functions are used for a large number of advanced purposes. Over-all number theory is extremely useful for applied mathematicians and physicists. But to understand those applications you must have a sound knowledge in both.

Keywords: Number Theory, Mathematics, Daily life, cryptography

Introduction:

Number theory, also known as 'higher arithmetic', is one of the oldest branches of Number Theory and is used to study the properties of positive integers. In the mid-20s, the number theory was considered as one of the purest forms of Number Theory until digital computers proved that this theory can provide answers to real-world problems. It is a branch of pure Number Theory devoted to the study of natural numbers and integers. It is the study of the set of positive whole numbers usually called the set of natural numbers. This theory is experimental and theoretical. [1] While the experimental number theory leads to questions and suggests different ways to answer them, the theoretical number theory tries to provide a definite answer by solving it. Number Theory plays a major role in the development



Probability and use of MATLAB

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Abstract:

In science, probability is a measurement tool that calculates the chance or likelihood of occurrence of an event. The chance is expressed between 0 and 1. With the chance being 0, the possibility of the occurrence of an event is nil. With the chance being 1, the possibility of the occurrence of an event is certain. The knowledge of probability has significantly evolved and is now an essential tool for statistics. In this paper, the basic theoretical principles of probability will be reviewed. The teaching of probability theory and mathematical statistics for Non-statistics Majors is an important problem in engineering mathematics education of our country. The interface of Matlab software is friendly, close to the windows standard interface, human-computer interaction is strong, the program does not need to be compiled to run. It also has a strong computing power and excellent data visualization capabilities. In particular, it is suitable for the students who first contact with the software, which is beneficial to the teaching of the teachers. Thereby, Matlab software should be adopted by teachers in the teaching process.

Keywords:

Probability, Distribution, Estimation, Sampling

Introduction:

In today's society based on information and technology, people are faced with more opportunities and choices. People often need to make rational decisions based on a large amount of data in uncertain scenarios (random phenomena). Probability theory and mathematical statistics is to help people look at the world from a random point of view, and help people how to make a more correct and reasonable decision in the face of a variety of accidental or a large number of irregular data [1].

The classic theory of probability underlines much probability in statistics. Briefly, it states that the chance of a particular outcome occurring is determined by the ratio of the number of favorable outcomes (or "successes") to the total number of the outcomes [3]. Expressed as a formula, $P(A) = \text{number of favorable outcomes} / \text{total # of possible outcomes}$. For example, the probability of randomly drawing an ace from a well-shuffled deck of cards is equal to the ratio 4/52. Four is the number of favorable outcomes (the number of aces in the deck), and 52 is the number of total outcomes (the number of cards in the deck). The probability of randomly selecting an ace in one



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TREND ANALYSIS OF UPI PAYMENTS DURING COVID-19

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Abstract:

The first instance of COVID-19 was discovered in India on January 27, 2020, in the state of Kerala, and it quickly spread throughout the entire nation. India's government declared the first lockdown on March 24, 2020, lasting 21 days, as part of its necessary precautionary measures to limit the spread of the COVID-19. People began using the digital payment system as a result of concerns over the spread of the COVID-19 virus via the physical method of payment, which led to a rapid expansion of the digital payments industry. The Indian government launched Digital India and placed a focus on cashless and digital transactions after demonetization in the year 2016. As a result, in India, the idea of a cashless or digital transaction is not new.

Keywords: UPI, Digital Mode of Payment, Covid-19

Introduction:

The National Payment Corporation of India (NPCI) launched the retail digital payment system known as the Unified Payment Interface (UPI) in April 2016. UPI offers the quickest platform for sending or receiving money quickly and is used with the aid of smartphone applications. For UPI transactions, a number of third-party applications, including Phonepe, Paytm, Google Pay, Amazon Pay, and Freecharge, among others, can also be used. In the midst of the COVID-19 epidemic, everyone is attempting to make payments online out of concern that the coronavirus may spread through the exchange of money notes. Every store, including small vegetable vendors and street vendors, has started to accept payments from customers made through UPI. Because a sender can transmit money to a recipient quickly and easily using a UPI QR code or BHIM UPI ID. Because UPI is a virtual payment system and the sender's physical presence is not necessary at the store to make a payment using it, many customers approved the use of the UPI payment system during the covid-19 pandemic emergency. Today, UPI offers a payment platform for more than just business transactions and money transfers between accounts; it also offers services for paying for things like electricity bills, D2H



Relation between Algebra and Geometry

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Abstract:

Mathematics means "knowledge, study, and learning". It includes the study of topics such as arithmetic, algebra, geometry, and mathematical analysis we have learned that **Algebra** is an area of mathematics that uses variables in the form of letters and symbols, in place of quantities or numbers in formulae and equations. We also know that **Geometry** is an area in mathematics that studies points, lines, multi-dimensional objects and shapes, surfaces and solids. But are they so very different from each other but useful to each other in some concepts like pythagoras theorem, co-ordinate axes etc.

Keywords:

Algebra, geometry, difference, co-ordination

1. Introduction:

Several civilizations in China, India, Egypt, Central America, and Mesopotamia equally contributed to mathematics. The counting system was first developed by the Sumerians. Mathematicians developed arithmetic, which includes basic operations, like addition, subtraction, multiplication, fractions, and square roots.

Mathematicians began to work with geometry, which deals with the areas and volumes to make angular measurements. Geometry is used everywhere from home



Why Is Social Media Presence So Crucial For Companies

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Abstract:

Social media enables businesses to reach out to new clients. Web-based training, team-based projects, disseminating updates about plans and activities to employees, looking for new offerings, and fact-checking are just a few new uses for social media in business. During the hiring process. This paper goal is to highlight potential trends in the use of social media to improve the efficiency of contemporary corporate endeavors. This paper contrasts a few different phases of Internet development categorization. The principle of collaborative content production and sharing, which is typical of Web 2.0, is still relevant in Web 3.0. The addition of a new feature that uses semantic analysis of messages posted in the virtual world, particularly social media, constitutes a qualitative distinction. Semantic research is largely used to modify the items offered to suit the wants of consumers. Information exclusion may also be related to the use of semantic tools. This research also examines the effects of information extraction from social media and the implications of semantic web in the contemporary setting.

Keywords:

Social media, semantic web, information exclusion, web personality

Progress of Transportation Problem

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Abstract:

Transportation problem (TP) is one of the predominant areas of Operations Research and it has wide applications in inventory control, communication network, production planning, scheduling, personal allocation and so forth. Transportation problems play an important role in logistics and supply chain management for reducing cost and improving service. In today's highly competitive market the pressure on organizations to find better ways to create and deliver products and services to customers becomes stronger. How and when to send the products to the customers in the quantities they want in a cost-effective manner becomes more challenging. Transportation models provide a powerful framework to meet this challenge. They ensure the efficient movement and timely availability of raw materials and finished goods. The objective of the transportation problem is to determine the shipping schedule that minimizes the total shipping cost while satisfying supply limit and demand requirements.

Keywords:

Transportation, problems, progress, Minimization of cost, Mathematical formulation

Introduction:

The transportation problem is a special type of linear programming problem, where the objective is to minimize the cost of distributing a product from a number of sources to a number of destinations. Transportation deals with the transportation of a commodity (single product) from 'm' sources (origin or supply or capacity centers) to 'n' destinations (sinks or demand or requirement centers) . It is assumed that, level of supply of each source and the amount of demand at each destination are known. The unit transportation cost of commodity from each source to each destination is known. The objective is to determine the amount to be shifted from each source to each destination such that the total transportation cost is minimum.



Law of Demand and Supply

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Abstract:

Two basic economic principles, supply and demand, control how buyers and sellers behave in a market. Demand denotes consumers' readiness to buy a good or service at various price points, whereas supply refers to the total amount of a good or service that producers are willing to offer at various costs. The market price of products and services is mostly determined by supply and demand. For an understanding of how markets work, supply and demand principles must be understood. These ideas give companies and customers the ability to foresee how changes in the market can affect their choices and actions. People can better grasp market dynamics and make better decisions by mastering supply and demand fundamentals.

Keywords:

Requisites, Demand, Supply, Consumer Behavior, Modelling.

Introduction:

Understanding demand and supply theory is crucial for understanding economics. It has been asserted that some correlations between price and quantity supplied and desired exist while holding other factors constant. How much does the quantity demanded or provided change, though, if the price changes? It's possible that a significant price increase or decrease will not significantly alter supply or demand. The demand or supply may significantly shift as a result of a slight price rise or decrease,



A Systematic Review of Robotics Technology

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Abstract:

The scope of technological developments is expanding due to new inventions. One such development that helps to address the persistent problem of excessive labour costs is the robot. It is an interdisciplinary field with a scope that includes computer science, electrical, mechanical, and electronic design. Robots today assist humans in many areas, making life more dependable and capable of completing tasks faster than a human. This essay provides an overview of robotics technology. We included the different robot types and their areas of use in this study since, in the current context; the robot vision system is primarily employed for inspection purposes in sectors like gauging and component presence verification. Our paper's primary goal is to inform readers about recent developments in robotics technology that benefit both businesspeople and regular people, as well as scientists, doctors, and engineers. Everyone is aware of how artificial intelligence is advancing in business and how the industry is becoming entirely dependent on AI to handle the complex operations. Engineering professionals devote a great deal of effort to creating robots that can do certain tasks and provide the intended outcomes in the field of robotics, which is one of the most well-known branches of manufacturing and sciences. As technology advances, engineers are all attempting to label robots with 0% error, which is virtually impossible. We can consider it, but 0% does not guarantee that it will be error-free; rather, it implies that it will give you the answer to every question without a shadow of a doubt.



Personality Development Essential for Students

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Abstract:

A combination of technical and communication skills is must for professionals to succeed in modern workplaces. With the increasing adoption of remote working, communication channels have increased, and so has the possibility of ambiguity. So, it's imperative that organizations foster an open and collaborative culture, encouraging employees to communicate clearly. Be it internal communication must be able to objectively express their feelings. While personality development is crucial, it begins at an early stage of life. The life of a student revolves around academics and scores, their self-growth is often overlooked, and in the process, personality development is hindered. The personality of a student influences not only their future professional achievement but also their overall perspective towards life. Students should cultivate an outgoing and impressive personality that will not only improve their academic performance but will also increase their chances of success in life. Personality development is important because it can enhance a student's social and emotional well-being, improve communication and interpersonal skills, and lead to greater success in personal and professional life.

Keywords:

Personality, development, reasons, stages, Psychology

Review of Smart Materials and their applications in Mechanical Engineering

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Abstract:

Smart materials are a class of materials that exhibit unique properties and can respond dynamically to external stimuli, such as temperature, light, pressure, or electric fields. The integration of smart materials into mechanical engineering has opened up new possibilities for designing and developing advanced systems and devices with enhanced functionality and improved performance. An overview of the different types of smart materials commonly utilized in mechanical engineering, including shape memory alloys, piezoelectric materials, electroactive polymers, magnetostrictive materials, and smart hydrogels. Each material type is discussed in terms of its unique properties, working principles, and manufacturing techniques. The applications of smart materials in various mechanical engineering domains. These applications include but are not limited to robotics, aerospace systems, automotive engineering, biomedical devices, energy harvesting, and vibration control. The review delves into specific examples within each domain, showcasing the advantages and potential of smart materials in transforming conventional mechanical systems.

Keywords:

Smart materials, Mechanical engineering, Shape memory alloys, Piezoelectric materials, Electroactive polymers, Magnetostrictive materials

Introduction:

Smart materials, also known as intelligent or responsive materials, have emerged as a promising field of study within the realm of materials science and engineering. These materials possess the unique ability to respond to external stimuli by changing their properties or behavior. The integration of smart materials into mechanical engineering has paved the way for the development of innovative systems and devices with enhanced functionality, improved performance, and increased adaptability. Within mechanical engineering, smart materials find diverse applications across various domains. These applications encompass robotics, aerospace systems, automotive engineering, biomedical devices, energy harvesting, vibration control, and many more [1]. By incorporating smart materials, engineers can revolutionize traditional designs, enhance system performance, and introduce intelligent features such as self-monitoring, self-repair, and adaptive responses to changing environments. The utilization of smart materials in robotics, for instance, enables the creation of flexible and biomimetic structures that can perform complex tasks with precision and agility. In the aerospace industry, these materials contribute to lightweight and aerodynamically efficient structures, improving fuel efficiency and reducing environmental impact. In the field of biomedical engineering, smart materials are utilized in implants, prosthetics, and drug delivery systems, allowing for personalized and responsive medical treatments. While the potential applications of smart materials in mechanical engineering are vast, challenges and limitations persist. Factors such as high production costs, limited material durability, complex control mechanisms, and safety considerations need to be addressed for wider adoption and commercial viability [2]. Ongoing research efforts aim to overcome these challenges, focusing on material advancements, manufacturing techniques, and intelligent control algorithms.

An Approach to Bypass Nodes in Wireless Sensor Networks based on Localized Routing

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Abstract:

In Wireless Sensor Networks with infected nodes, identifying infected nodes and deliver data packets are challenging. Infected nodes in Wireless sensor network are the sensor nodes one which exhibits anomaly. Anomalies in sensed data occur due to node failures, malicious attacks or due to dying energy level. Infected nodes can generate and send erroneous data to the base station. When such infected node exists in the WSNs, it causes communication disruption resulting in inaccurate data, misleading packet transmission. It is necessary to identify such infected nodes to ensure and maintain accurate data delivery. In this paper we are bypassing the infected nodes by exploiting uninfected node multi paths. Our approach takes the shorter path to bypass the infected node. We calculated the trust, bandwidth and packet delivery rate.

Keywords:

Trust, Infected Nodes, Bandwidth

Worldwide, there are numerous broad applications for wireless technologies [1]. Wireless communications use satellite-based connectivity to communicate globally. Wireless sensor networks including RF modem, Bluetooth, Wi-Fi, and Zigbee, among others, are used to communicate or transfer data in enclosed spaces or short-range applications like schools, colleges, offices, factories, and industries. The following are the main benefits of wireless sensor networks:

- Reliable one
- Authenticated one
- No use of cables
- Lesser cost than wired one

1.1 Wireless Sensor Network

In wireless communication, wireless sensor networks are crucial. The use of wireless sensor networks is advantageous in a variety of fields, including the military, civil, and healthcare. The sensor nodes that make up this network. That has the ability to detect changes in humidity, pressure, and temperature [2]. Data from the physical environment is collected, processed, and transmitted to the base station using this network. Sensor networks are made up of several kinds of sensors, including seismic, low sample rate magnetic, thermal, visual, infrared, and radar. The ability to monitor a wide range of environmental factors, such as vehicle movement, lightning conditions, pressure levels, soil composition, and noise levels, is one of the benefits of WSNs. For target field imaging, Earth monitoring, and disaster management in the military Sensors for fire alarms, sensors buried for precision farming, intrusion detection, and criminal investigation. The handling of the bulk of packets sensed and sent to each network node continues to be a significant problem. There are thousands of

Review of Nanotechnology Applications in Various Fields of Life

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Abstract:

Nanotechnology is referred to as the science of nanoscale which is object that range in nanometers in size. Our ability to create larger structures with nanometric accuracy is growing quickly and comprises of both additive and reductive methods. Nature, on the other hand, has perfected a variety of biological processes that operate at the nanoscale. In the review, we discuss the importance and use of nanotechnology in today's life and in future in various fields.

Keywords:

Nanotechnology, Nano materials, Quantumscale

Introduction:

The terms technology and the Greek numerical prefix Nano, which means one billionth, are combined to form the phrase nanotechnology. A nanometer is one billionth of a metre (10^{-9} m), hence it follows that nanotechnology or nanoscaled technology is typically thought to be at a size below $0.1 \mu\text{m}$ or 100 nm. Nano scale science, often known as nano science, is the study of phenomena, characteristics, and responses of materials at the atomic, molecular, and macromolecular dimensions, generally between 1 and 100 nm in size. The properties of matter differ dramatically at this scale, and notably below 5 nm, from those at a higher particulate scale (i.e., quantumscale effects play a considerable role). The design, manipulation, construction, manufacture, and use of structures, devices, and systems with a size of less than 100 nm are hence referred to as nanotechnology. Because of its ability to improve on already successful goods and to develop entirely new ones with entirely novel properties and functionalities with immense potential in a wide variety of applications, nanotechnology is regarded as an emerging technology. Along with numerous industrial applications, significant advancements are anticipated in information and communication technology, biology and biotechnology, medicine and medical technology, metrology, etc. Pharmaceuticals, cosmetics, processed foods, chemical engineering, high-performance materials, electronics, precision mechanics, optics, energy generation, and environmental sciences are just a few of the industries where nanoscience and nanoengineering have significant applications. In recent years, more than 50,000 nanotechnology publications have been published annually worldwide, and more than 2,500 patent applications have been submitted at significant patent offices like the European Patent Office. Nanotechnology is a growing and active topic. Nanotechnology can help in tackling important human problems like energy sufficiency, climate change, or fatal diseases. Not just to increase the industry's competitiveness, but also to develop new goods that will improve the lives of our people, whether in the fields of technology, medicine, the environment, or any other. Nanotechnologies and nanosciences open up new research directions and produce innovative, beneficial, and occasionally surprising applications. Products with improved performance can be made using new materials and surfaces with advanced engineering. For terminal illnesses including brain tumours and Alzheimer's disease, new medical treatments are being developed. A further reduction in these dimensions is necessary to improve the

A Comprehensive Overview of the Advancements in Vehicle Electrification Technologies

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Abstract:

The transition towards vehicle electrification has gained significant momentum in recent years, driven by the need to reduce greenhouse gas emissions and dependence on fossil fuels. This paper presents a comprehensive overview of the advancements in vehicle electrification technologies, encompassing various aspects including powertrain systems, energy storage, charging infrastructure, and associated technologies. There are different types of electric vehicles (EVs) currently available, namely battery electric vehicles (BEVs), hybrid electric vehicles (HEVs), and plug-in hybrid electric vehicles (PHEVs). It delves into the working principles and benefits of each type, highlighting their contribution to reducing emissions and improving energy efficiency. Furthermore, it explores the advancements in electric powertrain systems, focusing on electric motors, power electronics, and control systems. It examines the latest developments in motor technologies, such as permanent magnet motors, induction motors, and synchronous reluctance motors, along with advancements in power electronics and motor control algorithms. Another critical aspect covered in this overview is the advancements in energy storage technologies, primarily lithium-ion batteries. It examines the evolution of battery chemistries, energy density improvements, and the challenges associated with battery life, cost, and charging time. It also explores emerging technologies like solid-state batteries and their potential to revolutionize the EV industry. The different charging levels, from conventional AC charging to fast DC charging, and highlights the importance of standardization and interoperability. Furthermore, it explores innovative charging technologies such as wireless charging and vehicle-to-grid (V2G) systems, which enable bidirectional energy flow between EVs and the grid.

Keywords:

Vehicle electrification, Electric vehicles, Powertrain systems, Energy storage, Charging infrastructure, Battery electric vehicles, Hybrid electric vehicles, Plug-in hybrid electric vehicles, Electric motors, Power electronics, Control systems

Introduction:

In recent years, the global automotive industry has witnessed a paradigm shift towards vehicle electrification, driven by the urgent need to mitigate climate change, reduce dependence on fossil fuels, and improve air quality. Electric vehicles (EVs) have emerged as a promising solution, offering a cleaner, more sustainable alternative to traditional internal combustion engine (ICE) vehicles. The transition to vehicle electrification encompasses a wide range of technological advancements, covering powertrain systems, energy storage, charging infrastructure, and associated technologies [1]. Electric vehicles can be broadly categorized into three types: battery electric vehicles, hybrid electric vehicles, and plug-in hybrid electric vehicles. Each type offers its unique benefits and addresses different segments of the market, with BEVs being fully electric, HEVs combining electric and internal combustion engines, and PHEVs allowing for a limited electric-only range. One of the key areas of advancement in vehicle electrification lies in powertrain systems. Electric motors, power electronics, and sophisticated control systems play a crucial role in the efficiency and performance of EVs. Manufacturers have made significant strides in motor technologies, including the development of high-performance permanent magnet motors, efficient induction motors, and synchronous reluctance motors. The integration of regenerative braking

A Comprehensive Review of Energy Harvesting Technologies for Powering Autonomous Systems

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Abstract:

Energy harvesting technologies have gained significant attention in recent years as a promising solution for powering autonomous systems. These systems, ranging from wireless sensors to wearable devices and unmanned aerial vehicles, often operate in remote or inaccessible environments, making traditional power sources impractical. Various energy harvesting techniques, such as solar, vibration, thermal, and electromagnetic, are discussed in detail, along with their working principles and efficiency considerations. Additionally, the advancements in energy storage technologies, including batteries, supercapacitors, and hybrid systems, are explored to optimize energy utilization and ensure reliable operation. It covers a wide range of domains, including environmental monitoring, infrastructure health monitoring, wearable electronics, Internet of Things (IoT) devices, and autonomous transportation. The benefits, challenges, and limitations associated with each application are critically analyzed, along with real-world case studies and success stories. The efforts to enhance the efficiency, scalability, and miniaturization of energy harvesting devices, as well as the integration of multiple energy sources for improved power generation. The importance of system optimization, power management, and energy-aware algorithms is also emphasized to maximize the performance and autonomy of autonomous systems.

Keywords:

Energy harvesting, Autonomous systems, Powering, Renewable energy, Wireless sensors, Wearable devices, Aerial vehicles, Solar energy

Introduction:

Energy harvesting technologies have emerged as a promising solution to address the power requirements of autonomous systems. These systems, encompassing a diverse range of applications such as wireless sensors, wearable devices, and unmanned aerial vehicles, often operate in remote or inaccessible environments where traditional power sources are impractical. Energy harvesting provides an alternative approach by harnessing ambient energy from the surroundings to generate electrical power, enabling these systems to operate autonomously and sustainably [1]. The concept of energy harvesting revolves around the utilization of various natural energy sources, such as solar radiation, vibrations, thermal gradients, and electromagnetic fields. These sources are abundant in the environment and can be converted into usable electrical energy through different harvesting techniques. Solar energy harvesting employs photovoltaic cells to convert sunlight into electricity, while vibration energy harvesting utilizes piezoelectric or electromagnetic transducers to capture mechanical vibrations [2]. Thermal energy harvesting exploits temperature differentials using thermoelectric or thermophotovoltaic devices, and electromagnetic energy harvesting utilizes ambient electromagnetic fields to induce electrical currents. The advantages of energy harvesting technologies are numerous. They eliminate the need for traditional power sources, such as batteries or wired connections, which can be expensive, environmentally unfriendly, and impractical in remote locations. Energy harvesting systems offer enhanced portability, extended operational lifetimes, and reduced maintenance requirements, making them highly suitable for autonomous systems deployed in challenging or hard-to-reach areas. It covers various aspects, including the principles of energy harvesting techniques, energy storage considerations, and real-world applications in different domains. The review explores the advancements in energy harvesting

ADDITIVE MANUFACTURING (3D PRINTING) AND ITS IMPACT ON DESIGN AND FUTURE DIRECTION

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Abstract:

Additive Manufacturing (AM), commonly known as 3D printing, has emerged as a transformative technology with far-reaching implications across various industries. It is highlighting its unique ability to fabricate complex geometries layer-by-layer from digital 3D models. The review explores the diverse range of materials used in 3D printing, such as polymers, metals, ceramics, and composites, and assesses their respective strengths and limitations. Additionally, advancements in printing technologies, including Fused Deposition Modeling, Stereolithography, Selective Laser Sintering, and others, are examined for their impact on design possibilities and final product quality. The paper focuses on the impact of additive manufacturing on design processes. It explores how this technology enables designers to unleash their creativity by removing traditional manufacturing constraints. Iterative design cycles, rapid prototyping, and on-demand production are discussed, emphasizing how these aspects have revolutionized traditional design methodologies. Furthermore, the integration of AM with computer-aided design (CAD) tools and simulation software has significantly streamlined the product development workflow. This section explores the implementation of generative design techniques that utilize AM's capabilities to create optimized structures with enhanced performance and reduced material waste. The paper addresses the influence of additive manufacturing on various industries, including aerospace, automotive, healthcare, and consumer goods. Case studies and examples are provided to illustrate the successful adoption of 3D printing in each sector, showcasing its potential to disrupt traditional manufacturing methods and supply chains.

Keywords: Additive Manufacturing, 3D Printing, Design Impact, Rapid Prototyping, Generative Design, Digital Manufacturing, Manufacturing Innovation, Materials for 3D Printing

Introduction:

Additive Manufacturing (AM) has emerged as a revolutionary technology that has significantly impacted the design and manufacturing landscape. Unlike traditional subtractive manufacturing processes that involve cutting and shaping raw materials, AM fabricates complex objects layer-by-layer from digital 3D models. This transformative approach has opened up new possibilities for designers, engineers, and manufacturers, enabling them to create intricate and customized products with unprecedented speed and efficiency [1]. The capabilities of additive manufacturing have sparked widespread interest across various industries, as it offers numerous advantages over conventional production methods. Rapid prototyping, one of the hallmark features of 3D printing, allows designers to iterate and refine their concepts swiftly, reducing the time and cost associated with traditional prototyping. This iterative design process fosters innovation and encourages designers to push the boundaries of creativity. Moreover, the integration of AM with computer-aided design (CAD) software

AN OVERVIEW OF SCIENTIFIC PRINCIPLES OF MANAGEMENT

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Abstract:

The foundation of modern management science is the scientific management trend, which holds that there is only one optimum solution to solve every problem and focuses its efforts on identifying it and using it in the production process. We continue to see the effects of Taylor's theories and insights, which started this movement. It has been noted that the Taylor-criticized traditional management approach which is completely disregarded in the hiring procedure. Additionally, it is seen that a higher level has been reached by employing Taylor's suggested scientific management techniques during the hiring process. This paper describes the Taylor scientific principles, its characteristics and its need.

Keywords: Principles, Scientific Theory, Management, Competition, Business

Introduction:

Even if first-person management is defined as carrying out tasks through other individuals. Taylor is largely to blame for the term "science" being used to describe it. Because of his contributions to the growth of the area of production studies, Taylor is a pioneering figure. Furthermore, Taylor's Principles of Scientific Management, which has been hailed as a masterpiece, is still a crucial resource for researchers working in this field. Among the others, the concept that "there must be a best way to do a certain job" has advanced. It is grounded in induction and employs a practical and analytical methodology. This idea has to be applied to the study of time and motion as well as to the contrast between humans and robots [1].

The United States was the first to adopt Taylor's book, "The Principles of Scientific Management," before all managers worldwide. He presented the belief that management is not just a matter of theory but also of practical implementation in factories, where it first emerged. Instead of being described as a method of productivity that was popular at the time, the scientific method should be seen as a mental revolution. Employers and managers who anticipated this change ought to have enhanced income by working together rather than splitting surplus cash [2].

Importance of scientific management [3]:

- It helps organizations allocate their resources properly, therefore allowing them to maximize their profits.
- It allows quality management, which further helps businesses strengthen their relationship with employees.
- By scientifically directing employees to desired objectives, businesses can ensure an increase in productivity.

Features:

- Individual Employee Development for Competence and Success: Extra work should be placed into improving the employees' competency in order to achieve optimal production. Offering the sort of work and an employee's aptitude for a certain activity should be emphasised when hiring new

BIOMETRIC IDENTIFICATION OF HUMAN IRIS PATTERNS

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Abstract:

A well-known biometric identification method for identifying people based on their physical characteristics uses iris identification. The iris has a distinct texture, and each person has a different iris structure. Because human physical characteristics are distinctive and stable, as is well known, iris recognition has advanced significantly in recent years. Given that it inherits the random variation of the data, iris recognition is often a dependable field of technology. In the suggested research of approach, we have built and implemented a framework employing a number of subsystems, where each stage is related to the other iris recognition system and is referred to as segmentation, normalization, and feature encoding. MATLAB is used to carry out the investigation.

Keywords: Iris Recognition; Histogram of Oriented Gradient; Gray Level Co-Occurrence Matrix; Local Binary Pattern

Introduction:

1.1 Introduction

Identification of humans is a goal as ancient as humanity itself. As technology and services have developed in the modern world, human activities and transactions have proliferated in which rapid and reliable personal identification is required. Examples include passport control, computer login control, bank automatic teller machines and other transactions authorization, premises access control, and security system generally. All such identification efforts share the common goals of speed, reliability and automation [32].

The use of biometric indicia for identification purposes requires that a particular biometric factor be unique for each individual that it can be readily measured, and that it is invariant over time. Biometrics such as signatures, photographs, fingerprints, voiceprints and retinal blood vessel patterns all have significant drawbacks. Although signatures and photographs are cheap and easy to obtain and store, they are impossible to identify automatically with assurance, and are easily forged. Electronically recorded voiceprints are susceptible to changes in a person's Voice and they can be counterfeited. Fingerprints or handprints require physical contact, and they also can be counterfeited and marred by artifacts.

Human iris on the other hand as an internal organ of the eye and as well protected from the external environment, yet it is easily visible from within one meter of distance makes it a perfect biometric for an identification system with the ease of speed, reliability and automation. In this thesis, we are going to experiment, implement, and most importantly, look into the theory behind an Iris Recognition System, which is not only related to the filed of personal identification, and more specifically to the field of automated identification of humans by biometric indicia.

1.2 Biometric Technology

A biometric system provides automatic recognition of an individual based on some sort of unique feature or characteristic possessed by the individual. Biometric systems have been developed based on fingerprints, facial features, voice, hand geometry, handwriting, the retina, and the one presented in this

CLASSIFY TEXT DATA USING MATLAB AND NEURAL NETWORK

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Abstract:

Analysis of sentiments or opinions about things like products, services, and people is done using sentiment analysis. Since a significant amount of data is produced every day in different forms, including text, audio files, and videos in the social media on the internet, it has recently become a particularly active research subject. Positive, negative, or neutral opinions are classified according to sentiment analysis.

This paper discusses an important area of viewpoint research: the investigative problem of analyzing attitudes in social media via online websites.

Keywords: Sentiment analysis, NLP, Machine learning, Neural Network, MATLAB

I. INTRODUCTION

Sentiment analysis is an area of study for examining opinions given in content in a few social media sites [1]. SA helps data analysts within corporate and large enterprises to find public opinion, monitor brand and product response, conduct market research and finding customer experiences.

SA is a text analysis process that finds polarity (i.e. positive, negative or neutral) within the text, whether a whole paragraph, sentence, clause or document. In other words, it is a process of automation for finding opinion from the text. It is also defined as “emotional artificial intelligence” or “opinion mining”. It is a part of natural language processing (NLP). It is concerned with the voice from the client e.g. reviews on the web-blogs and online social networks. It determines the emotional or passionate response in communication or in the reviews.

Sentiment Analysis [2] oversees analyzing sentiments, feelings, and the attitude of a speaker or a creator from a given piece of message. Feeling examination or assessment mining is a multidisciplinary and multi-layered computerized reasoning issue. Its point is to limit the opening in human and PC. Along these lines, it is social event of human understanding and electronic information for mining the substance and orchestrating customer ideas, enjoys, scorns and wishes.

MAJOR STEPS IN SENTIMENT EXAMINATION

- Text Removal – This step involves extracting words from text that influence [3] the outcome of the result.
- Text Refinement – This step involves refining text in form of relevant phrases, words etc.
- Text Organization – This step includes organization of text into its class (positive/destructive)
- Score Combination – This step assembles total scores from classifier and then aggregates it further to produce the total sentiment score [4].

FEATURE EXTRACTION IN SENTIMENTAL ANALYSIS

One of the key application areas for mechanism learning techniques is text analysis. However, as most algorithms prefer raw text forms with variable lengths to arithmetical feature routes with fixed sizes, the raw information, such as a list of symbols, cannot be provided directly to the algorithms themselves.

To solve this, sickie-learn provides tools for the most common methods of extracting numerical structures from text, namely:

CONCEPTS OF FRICTION AND WEAR RELATED TO BEARING AND CLUTCHES

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Abstract:

Clutches are utilised in automatic transmissions to shift gears while also reducing energy loss in the torque converter. These friction devices are sensitive to stick-slip effects, resulting in an uneven ride. Stick-slip effects can be prevented by ensuring that the wet clutch and lubricant mixture creates an increasing friction coefficient with sliding speed. This friction characteristic is produced through the use of a specific material on one of the two clutch surfaces as well as the use of surface active chemicals. Friction clutches are critical components that ensure the proper operation of many mechanical systems. Understanding the many types of friction clutches, their operating principles, and applications can assist individuals in picking the best clutch for their unique needs. In the following sections, the wear process is more intricate in that surface wear qualities are determined by a variety of parameters, including sliding type, mode of loading, and operating environment. This paper will look at the fundamentals of tribology, such as friction, various lubricants, wear kinds, and the mechanisms involved in the wear process.

Keywords: Friction, Wear, Bearing, Clutches, Gears

Introduction:

A friction clutch operates on the basis of two key components: the driving member and the driven member. The driving member is typically attached to the crankshaft of the engine, while the driven member is connected to the gearbox shaft. Using springs or hydraulic pressure, the driving element is forced against the driven member, providing a frictional force between the two surfaces. This frictional force therefore permits torque to be transferred from one driving member to the other, effectively transmitting power between the two shafts [3].

Friction clutches are critical components that ensure the proper operation of many mechanical systems. Understanding the many types of friction clutches, their working principles, and their uses can assist individuals in picking the best clutch for their needs. Wear rate, coefficient of friction, volume loss, worn-out morphologies study, and mechanical properties and microstructure research are all part of the wear behaviour examination. Jeyaprakash et al. explored wear resistance, friction behaviour, and several wear mechanisms using laser coating [4]. Si et al. created the Fe-Mo-Cr-Co coating and investigated its wear and corrosion resistance qualities [5].

A friction clutch is most commonly used in the power transmission of shafts and machines that must be started and stopped frequently. It is also used when electricity must be given to machines that are partially or fully loaded. The friction force is utilised to start the driven shaft from rest and gradually get it up to speed without causing undue slipping of the friction surfaces. A friction clutch is used in automobiles to link the engine to the driving shaft. When using such a clutch, take care that the friction surface engages readily and gradually takes the driven shaft up to speed.

What is Clutch Definition?

A clutch is a mechanical device that engages and disengages the power transmission means shaft, particularly between the driving and driven shafts. When it comes time to change gears in the gearbox

DEVELOPING A STRATEGIC PLAN FOR HIGHWAY INFRASTRUCTURE AND CONSTRUCTION

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Abstract:

In India, the national highway development program (NHDP) is managed by the National Highway Authority of India (NHAI). In India, as in the rest of the globe, transportation plays a critical role in economic development, as well as in other areas such as agricultural and industrial development. Geometric highway design is concerned with the creation of physically apparent roadway features such as cross sectional elements, sight distances, alignment, bends, super elevation, and other linked features. India is one of the countries where population growth is causing an increase in traffic volume. Furthermore, government funding for transportation infrastructure development is not acceptable. Highway expansion increases the quality of existing roadways while also improving connections between major economic centers. Highway growth is driven by increasing traffic and the desire to boost the area's economic capability. Furthermore, the accession activity disrupts the ecology and causes several changes in the surrounding landscape. It also has an impact on both abiotic and biotic components, both directly and indirectly. National Highway Environmental Impact Assessment is required. Concrete pavement design has grown in importance in the promotion of concrete roads throughout the years. High investment costs must be justified, and the benefits of a pavement that requires less care over a longer design life must be demonstrated prior to construction.

Keywords: Highway, Road, Safety, Accidents, Economy, Construction, Transport, Development, Materials

Introduction:

A better road network is critical to the country's development in many aspects, including the economy. Traffic in cities and on roads has been steadily increasing in recent years, which has resulted in an increase in the number of accidents. The government is constantly working on road improvement to ensure people's safety. Many highways have already been built, while others are under construction. Agra to Mumbai is one of the developing highways. The some parts of National Highway are already developed by converting into 4 lanes from 2 lanes. But some part of highway is still under construction. The length of highways in India is 66,590 kms. This highway is one of the largest India national highways which starts from Agra in utter Pradesh and ends in Mumbai in Maharashtra. The highway passes through the cities of utter Pradesh, Rajasthan, Madhya Pradesh and Maharashtra. The highway is 1,190 kilometers long. The road between Agra and Gwalior is currently four lanes wide. However, the road from Gwalior to Shivupuri, Guna, Makshi, and Dewas does not have four lanes. The road is in

DEVELOPMENT OF WEARABLE SENSORS AND DEVICES FOR MONITORING BIOMECHANICAL PARAMETERS

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Abstract:

Advances in wearable technology have spurred the development of innovative sensors and devices for monitoring biomechanical parameters, enabling real-time assessment of human movement and physiological responses. This research aims to explore the recent developments in wearable sensor technologies, their integration into portable devices, and their applications in tracking various biomechanical parameters. The study encompasses a comprehensive review of existing literature, highlighting the principles, design considerations, and performance metrics of wearable sensors. Key areas of investigation include the evolution of sensor materials, miniaturization techniques, and wireless communication protocols that contribute to the development of unobtrusive and user-friendly wearable devices. The research also examines the integration of data fusion algorithms and machine learning techniques to enhance the accuracy and reliability of biomechanical parameter measurements, allowing for detailed analysis of gait, posture, joint movements, muscle activity, and other relevant metrics. Furthermore, this research delves into the diverse applications of wearable biomechanical sensors, such as sports performance optimization, rehabilitation monitoring, ergonomic assessment, and healthcare diagnostics. The potential impact of these devices on personalized medicine and preventative healthcare strategies is explored, with an emphasis on the integration of wearable sensors into telemedicine platforms for remote patient monitoring. Through a multidisciplinary approach, this research contributes to the advancement of wearable sensor technology, offering insights into the challenges, opportunities, and future directions in the field of biomechanical parameter monitoring.

Keywords: Wearable sensors, Biomechanical parameters, Human movement, Physiological monitoring, Sensor integration, Miniaturization, Wireless communication

Introduction:

In recent years, the rapid evolution of wearable technology has ushered in a new era of personalized healthcare, sports performance optimization, and human movement analysis. Wearable sensors and devices have emerged as powerful tools for monitoring biomechanical parameters, enabling real-time assessment of intricate physiological responses and capturing intricate details of human motion [1]. This research delves into the dynamic landscape of wearable sensors and their pivotal role in the development of devices that provide comprehensive insights into biomechanical characteristics. Advancements in sensor technology coupled with innovative design and engineering, have revolutionized the way we capture, analyze, and interpret human movement. The integration of miniature sensors into portable devices has facilitated unobtrusive data collection, opening doors to a plethora of applications ranging from sports training to clinical rehabilitation. Biomechanical parameters, encompassing gait patterns, joint movements, muscle activations, and postural dynamics, hold crucial insights into physical

FLUID MECHANICS ADVANCES: THEORY, APPLICATIONS, AND FUTURE PROSPECTS

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Abstract:

Fluid mechanics is a discipline of physics and engineering that investigates the behaviour of fluids such as liquids, gases, and plasmas. This research article gives an in-depth examination of the most recent advances in fluid mechanics, including both theoretical findings and practical applications. The paper investigates the underlying principles driving fluid flow, analyses various computational and experimental approaches used to study fluid dynamics, explores applications in many industries, and emphasises potential future research prospects in the topic.

Keywords: Fluid, fluid mechanics, fluid dynamics

Introduction:

Fluid mechanics is the study of how fluids respond to forces applied to them. It is a subfield of classical physics that has important applications in hydraulic and aeronautical engineering, chemical engineering, meteorology, and zoology [1].

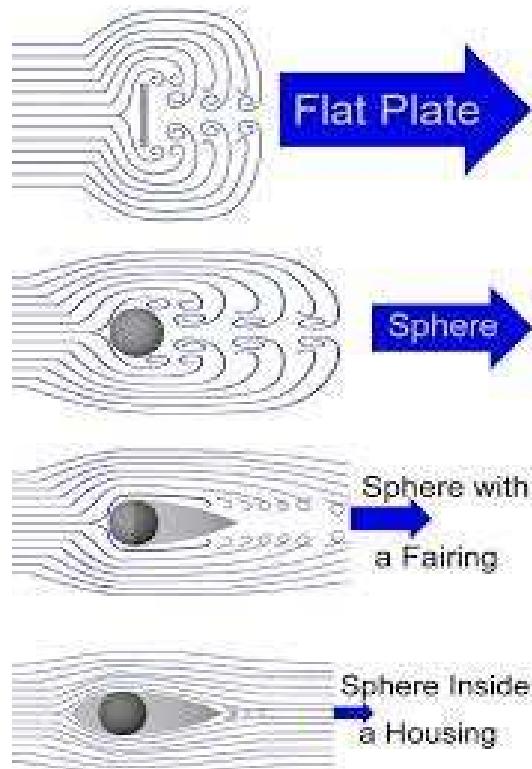


FIGURE 1: EFFECTS OF VISCOSITY ON FLUID FLOW AND SHAPE

GREEN ENERGY AS A REAL STRATEGIC OPTION FOR SUSTAINABLE DEVELOPMENT

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Abstract:

The escalating concerns about climate change and environmental degradation have spurred global interest in sustainable development solutions. Among these solutions, green energy, also known as renewable energy, has emerged as a promising strategic option to address the challenges posed by traditional fossil fuels. This research explores the potential of green energy as a real strategic option for sustainable development, examining its environmental, economic, and social impacts. The environmental analysis reveals that green energy sources, such as solar, wind, hydro, and geothermal power, produce negligible greenhouse gas emissions during operation. Consequently, they significantly reduce carbon footprints, improve air and water quality, and promote biodiversity conservation. In terms of economic viability, technological advancements, economies of scale, and government incentives have made renewable energy increasingly cost-competitive, resulting in job creation and enhanced energy security. The social implications of green energy adoption are equally noteworthy. Lower air pollution levels lead to improved public health outcomes, reducing healthcare costs and enhancing community well-being. Community engagement in green energy projects fosters local support and facilitates the equitable distribution of energy resources. Moreover, renewable energy solutions can extend energy access to underserved regions, thereby contributing to socio-economic development. The research highlights the importance of robust policy and regulatory frameworks in driving the transition to green energy. Government incentives, carbon pricing mechanisms, and smart grid infrastructure development are essential enablers of sustainable energy adoption. However, challenges such as intermittent energy supply, high upfront costs, and the need for continuous technological advancements require strategic attention.

Keywords: Green energy, Renewable energy, Sustainable development, Climate change, Environmental impact, Economic viability

Introduction:

In the face of pressing global challenges such as climate change, environmental degradation, and finite fossil fuel resources, the quest for sustainable development has become an imperative for societies worldwide. As the adverse effects of traditional energy sources continue to escalate, attention has turned towards green energy as a real strategic option for sustainable development. Green energy, also known as renewable energy, encompasses an array of environmentally friendly sources, including solar, wind, hydro, geothermal, and biomass power, offering a clean and sustainable alternative to conventional fossil fuels. By investigating its multifaceted impacts on the environment, economy, and society, this study seeks to underscore the significance of embracing renewable energy technologies for a greener, more resilient future [1]. The environmental dimension delves into the critical role green energy plays

HOW CORPORATE SOCIAL RESPONSIBILITY IMPACTS CONSUMER BUYING BEHAVIOR

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Abstract:

Staff members and customers value working for and spending their money with companies that score well on Corporate Social Responsibility (CSR) in today's socially conscious environment. Various commercial organizations engage in Corporate Social Responsibility, which is a dynamic business practice. Corporate Social Responsibility has advantageous effect on a variety of social, economic, political, and environmental variables. This investigation intends to examine the various customer perceptions and their influence on various Corporate Social Responsibility initiatives. Additionally, it illustrates the underlying mechanisms and circumstances of this impact while observing the level of client trust in various organizations. This paper draws its data from a survey that was given to 400 randomly selected clients. Results indicate that consumer perceptions of Corporate Social Responsibility efforts have a beneficial impact on their faith in corporations, both directly and indirectly, through an impact on the perceived value of the goods given and customer satisfaction.

Keywords: CSR, perceptions, consumers, organizations, Corporate Social Responsibility

Introduction:

In the latter half of the 1960s, multinational businesses coined the word "stakeholder." Individuals who were in any way impacted by a corporation's operations were referred to as stakeholders. "Corporate social responsibility" quickly became a widely used phrase. Corporate social responsibility (CSR) aims to hold businesses accountable for all of their deeds and to make a positive difference for all of its stakeholders, including the environment, local communities, the people who work there, the customers they serve, and the environment. CSR is "the responsibility of enterprises for their impacts on society," according to the European Commission (2011). More specifically, a corporation's responsibility includes incorporating social, environmental, and ethical issues, as well as consumer and human rights concerns, into its business operations and core strategy, working closely with its stakeholders. CSR is described as "a business organization's configuration of principles of social responsibility, processes of social responsiveness, and policies, programmes, and observable outcomes as they relate to the firm's societal relationships" in study literature. [1]

The study investigates how a consumer's decision-making process or purchase choice is impacted by corporate social responsibility. Consumer purchasing behavior appears to be linked to ethical duty and charitable obligation. It is essential to educate customers about a company's CSR efforts. It contributes to establishing a powerful and favorable impression of the business. However, since it can undermine the company's carefully cultivated image, we should put more of an emphasis on doing than just advertising. With misleading advertising, consumers may feel mistrusted, which can have a negative domino effect that could be detrimental to the business. The reputation and dependability of a company

HUMAN-ROBOT INTERACTION: ANALYSIS ON VARIABLE ADMITTANCE CONTROL, SAFETY, AND PERSPECTIVES

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Abstract:

The field of Human-Robot Interaction (HRI) has witnessed significant advancements in recent years, paving the way for increasingly integrated and sophisticated robotic systems in various domains. This research focuses on the analysis of Variable Admittance Control (VAC) techniques, their impact on safety in human-robot interactions, and the perspectives surrounding their application. Variable Admittance Control is a control strategy that enables robots to adapt their impedance or stiffness in response to interactions with humans. By adjusting the level of compliance, robots can safely and effectively collaborate with humans in shared workspaces. This research reviews the different implementations of VAC in HRI scenarios and investigates their effectiveness in enhancing the naturalness and safety of human-robot interactions. Safety is a paramount concern in HRI, as close proximity and physical collaboration between humans and robots pose inherent risks. Therefore, this study delves into the safety considerations and challenges associated with VAC implementation. Various safety measures, such as force and proximity sensing, collision avoidance, and emergency stop mechanisms, are evaluated to ensure the well-being of both human operators and the robots themselves. Moreover, this research examines the perspectives of users, engineers, and other stakeholders involved in HRI applications. By conducting surveys, interviews, and observational studies, the study analyzes the opinions, preferences, and concerns of individuals interacting with robots under variable admittance control. These perspectives offer valuable insights into user acceptance, trust, and perceived benefits, influencing the future development and deployment of HRI systems.

Keywords: Human-Robot Interaction (HRI), Variable Admittance Control (VAC), Robotics, Control Strategies, Shared Workspaces, Proximity Sensing, Collision Avoidance, Emergency Stop Mechanisms

Introduction:

Human-Robot Interaction (HRI) has emerged as a transformative and dynamic field, bringing humans and robots into ever-closer collaboration across various domains. The seamless integration of robots in our daily lives, industries, and healthcare settings has revolutionized the way we live, work, and interact with technology [1]. As robotic systems become more prevalent, the need for safe and efficient interactions between humans and robots becomes increasingly critical. Variable Admittance Control (VAC) has emerged as a promising control strategy to address this challenge, enabling robots to adapt their impedance or stiffness during interactions with humans. In the context of HRI, Variable Admittance Control refers to a control approach that allows robots to modify their physical compliance in response to external forces and contact with human operators. By adjusting their level of compliance, robots can effectively collaborate with humans in shared workspaces, such as assembly lines, rehabilitation centers, or domestic environments, while maintaining safety and performance. The focus of this research lies in a comprehensive analysis of Variable Admittance Control in HRI scenarios. The

PERFORMANCE AND OPTIMIZATION OF COMPACT HEAT EXCHANGERS

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Abstract:

Compact heat exchangers play a crucial role in various industrial and engineering applications, facilitating efficient heat transfer between fluids while minimizing space and energy consumption. The optimization of compact heat exchangers holds paramount importance in modern engineering and industrial applications, driven by the need for enhanced thermal efficiency and optimal resource utilization. This research delves into the realm of performance and optimization of compact heat exchangers, exploring novel methodologies and strategies to achieve optimal heat transfer while minimizing size, energy consumption, and associated costs. The abstract initiates by underlining the vital role of compact heat exchangers in diverse sectors, from automotive and aerospace to renewable energy and electronics cooling. It highlights the evolving demands for compact, high-performance heat exchange solutions in the face of constrained spatial considerations and increasing environmental concerns. Focusing on the underlying principles of heat transfer and fluid dynamics, the research delves into the intricate mechanisms governing heat exchanger performance. It discusses the delicate balance between heat transfer enhancement and pressure drop mitigation, illustrating how this interplay influences overall efficiency and effectiveness. Furthermore, the abstract emphasizes the challenges posed by fouling, corrosion, and scaling, which can degrade heat exchanger performance over time. Drawing inspiration from emerging technologies and computational tools, the research explores innovative techniques for optimizing compact heat exchangers. Computational Fluid Dynamics (CFD) simulations and numerical modeling are spotlighted as invaluable tools for predicting and fine-tuning heat exchanger performance. Machine learning algorithms and artificial intelligence are also explored for their potential in automating and enhancing the optimization process.

Keywords: Compact heat exchangers, Performance optimization, Thermal efficiency, Energy consumption, Space utilization, Heat transfer enhancement, Pressure drop mitigation, Fluid dynamics, Computational Fluid Dynamics (CFD), Numerical modeling

Introduction:

In the realm of modern engineering and industrial applications, the quest for efficient and compact heat exchange solutions has become increasingly vital. The demand for high-performance heat exchangers that balance optimal thermal efficiency with minimal spatial requirements and energy consumption has spurred a thriving field of research and innovation. This pursuit of excellence in the performance and optimization of compact heat exchangers addresses not only the intrinsic challenge of efficient heat transfer but also the broader context of environmental sustainability and economic viability [1]. Compact heat exchangers play a pivotal role in diverse industries, from automotive and aerospace to renewable energy and electronics cooling. Their ability to facilitate the exchange of thermal energy between fluids while occupying a fraction of the space of conventional counterparts has revolutionized

PSYCHOLOGICAL FACTORS IMPACTING INVESTMENT DECISION MAKING

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Abstract:

The notion of behavioral finance is used to study how psychological variables affect investors' trading and investment decisions and how those actions ultimately affect the capital market. The paradigm of behavioral finance, which has lately gained popularity in the study of the financial markets, examines the impact of psychological variables on the development of the financial markets. In other words, behavioral finance examines the inefficiencies of the financial markets in the context of psychological ideas and viewpoints. Behavioral finance is based on psychological concepts that analyze a variety of elements, including overconfidence, heuristics and biases, emotion and social influences, etc. This research aids in understanding the investor's capacity to balance the irrational aspects of investing choices while meeting their unique needs and preferences. The traditional models, on the other hand, fell short in their attempts to explain and address the anomalies of the financial market, and this failure solidified the use of the behavioral finance model, which describes in detail the reasons why a person makes a particular investment decision. In addition to stating that the performance of the portfolio and its effects on the equity market are also impacted, this study provides insight into how psychological factors affect how individuals make investment decisions and trade.

Keywords: Psychological factors, Investment decisions, Equity market, Investor's trading

Introduction:

For years, traditional conventional finance has consistently assumed that investors are normal and sensitive in their stock market investing decision-making and as a result, they are impassive about risk return trade-offs and capturing value. According to the efficient market hypothesis, they must have taken into account all relevant information and be objective when evaluating securities and picking winning equities. However, psychologists have discovered that people do not act as logically as economists believe. The occurrence of stock market anomalies and empirical studies carried out by experts has shown that investors are not always as rational as they are portrayed to be. A newly developing field of finance known as behavioral finance can be used to explain these oddities. The study of behavioral finance examines how different psychological characteristics influence how people or groups behave as investors, analysts, and portfolio managers. It aims to comprehend how investor behavior is influenced by emotions and cognitive mistakes. It also tries to explain why and how investors sometimes act in ways that go against what is expected of them and goes beyond the bounds of reason [1].

The relationship between risks and return in the stock markets has been studied by a number of financial analysts, who have come to the conclusion that higher risk translates into higher return and lower risk into lower return. Generally speaking, the relationship between risk and return is a component of human decision-making as well, but investors are unable to analyze risks and returns in an objective manner; instead, they act emotionally, meaning that their actions are a direct result of how they perceive the

REVIEW OF SMART MANUFACTURING TECHNOLOGIES AND INDUSTRY 4.0

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Abstract:

The Fourth Industrial Revolution, commonly known as Industry 4.0, has driven a paradigm shift in the manufacturing sector by integrating advanced technologies to create Smart Manufacturing. There are fundamental principles of Industry 4.0, highlighting its transformative impact on the traditional manufacturing landscape. It delves into the core technologies that underpin this revolution, including the Internet of Things (IoT), Cyber-Physical Systems (CPS), Big Data analytics, Artificial Intelligence (AI), and Cloud Computing. Each technology's role in enabling connectivity, data collection, real-time monitoring, and autonomous decision-making within the manufacturing environment is thoroughly examined. There are various industrial domains that have embraced smart manufacturing, such as aerospace, automotive, electronics, and pharmaceuticals. Specific case studies exemplify how these industries have leveraged Industry 4.0 technologies to optimize production processes, improve product quality, enhance supply chain efficiency, and drive innovation. While acknowledging the tremendous benefits brought forth by Industry 4.0, the paper also acknowledges the inherent challenges and concerns. Security and data privacy issues arising from increased connectivity and data exchange are analyzed, along with potential solutions to mitigate risks. Workforce adaptation and upskilling, as well as the socio-economic implications of automation, are also critically evaluated. It discusses the potential for reshoring and localization of production, reduced resource consumption, and greener manufacturing practices driven by enhanced sustainability awareness.

Keywords: Industry 4.0, Smart Manufacturing, Fourth Industrial Revolution, Internet of Things (IoT), Cyber-Physical Systems (CPS), Big Data Analytics, Artificial Intelligence (AI), Cloud Computing

Introduction:

The advent of the Fourth Industrial Revolution, commonly known as Industry 4.0, has triggered a transformative wave of technological advancements that is reshaping the traditional manufacturing landscape. This paradigm shift, characterized by the integration of advanced digital technologies and intelligent systems, has given rise to Smart Manufacturing—a new era marked by unprecedented levels of efficiency, productivity, and innovation. This review paper aims to provide a comprehensive exploration of the key concepts and technologies associated with Industry 4.0, delving into its applications, benefits, challenges, and broader socio-economic implications. Industry 4.0 represents a convergence of cutting-edge technologies that have the potential to revolutionize the manufacturing sector [1]. At its core lies the Internet of Things (IoT), enabling seamless connectivity and data exchange among machines, devices, and systems. This interconnectedness forms the foundation for the development of Cyber-Physical Systems (CPS), where the physical and digital realms synergize to create intelligent and autonomous manufacturing environments. The wealth of data generated through these interconnected systems is harnessed through Big Data analytics, enabling real-time monitoring,

THE EVOLUTION OF GREEN MARKETING

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Abstract:

Many firms in India have been introduced to the idea of green marketing, but putting it into practice is not straightforward. Cost, client attitude, and lack of teamwork are a few of the factors that affect the implementation of green practices. Technology advancement and rapid industrialization have both positive and negative effects. As consumers become more environmentally conscious, they are placing greater demands on businesses to interact with them in an ethical manner. Many companies strive to create a positive impression in their clients' eyes. The business and its marketers are aware that their involvement in economic, social, and environmental activities has an impact on society as a whole and will be taken into account for corporate social responsibility. This paper discusses a variety of marketing tactics that manufacturers and marketers utilize in this cut-throat environment for green marketing.

Keywords: Green Marketing, Strategies, Marketers, Consumer Awareness

Introduction:

In the current situation, protecting the environment is a major challenge for everyone. The ecological balance of the planet is influenced by the ways in which industries produce things and how people use them. We have been dealing with a serious environmental issue globally for the past few decades. The majority of consumers realized that their purchasing habits directly impacted the environment, and they have since begun to take steps to protect it. Consumers now prefer to purchase products that are ecologically friendly due to a change in their consumption habits. Businesses now have access to a whole new range of options because to the movement in customer purchasing habits towards environmentally friendly goods. At this point, sustainability was being incorporated into every commercial firm's operations. Marketing is one of the corporate sectors where environmental issues are heavily debated and actively pursued. Modern business practices are incorporating new concepts like sustainable marketing, green marketing, environmental marketing, and ecological marketing [1].

In terms of production, promotion, pricing, and distribution, green marketing refers to actions taken by the company that do not hurt the environment. In order to satisfy people's needs and preferences while causing the fewest possible negative impacts on the environment, green marketing entails actions created to produce and monitor exchange. Given the finite nature of resources and the insatiable nature of human desires, it is crucial for marketers to make the best possible use of available resources while also achieving the goals of the company. Green marketing is therefore inevitable. It can be said that green marketing encourages a style of conducting business that tries to provide goods that will utilize the fewest resources possible to satisfy consumer wants [2].

Green Marketing: A Literature Review

A REVIEW OF ADVANCES IN EMERGING ALTERNATIVE HEATING AND COOLING TECHNOLOGIES**Prince Chawla¹ Ankur Gill²,**

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Abstract:

With the escalating concerns over environmental degradation and the imminent challenges posed by climate change, there is a growing demand for sustainable and energy-efficient heating and cooling technologies. The review encompasses a wide range of innovative solutions, including but not limited to geothermal systems, solar thermal heating, absorption and adsorption cooling, phase change materials, and thermoelectric devices. Each technology's underlying principles, operating mechanisms, and implementation scenarios are explored to provide a holistic understanding of their capabilities. Drawing upon various studies and experimental data, this review assesses the performance metrics of these alternative systems in comparison to conventional heating and cooling methods. Moreover, it delves into the economic viability and environmental impact of adopting such technologies, considering factors such as initial costs, maintenance requirements, and carbon footprint reduction potential. There are challenges and barriers that have hindered the widespread adoption of these emerging technologies, such as limited scalability, complex installation procedures, and public awareness. In response, possible strategies and innovations to address these obstacles are proposed. It offers valuable insights into the recent advancements in alternative heating and cooling technologies, shedding light on their potential to mitigate greenhouse gas emissions and reduce dependence on fossil fuels. As technology continues to progress, the seamless integration of these sustainable solutions into mainstream practices could pave the way for a more environmentally responsible and energy-efficient future.

Keywords: Alternative heating, Alternative cooling, Sustainable technologies, Energy efficiency, Geothermal systems, Solar thermal heating, Absorption cooling, Adsorption cooling, Phase change materials, Thermoelectric devices, Environmental impact, Economic viability

Introduction:

In the face of accelerating climate change and growing concerns about environmental sustainability, the quest for innovative, energy-efficient, and environmentally friendly heating and cooling technologies has gained paramount significance. Traditional methods of indoor temperature regulation often rely heavily on fossil fuels, leading to greenhouse gas emissions and exacerbating the global climate crisis. As a result, researchers, engineers, and policymakers have been actively exploring emerging alternative heating and cooling technologies as viable solutions to address these pressing challenges. A comprehensive overview of recent advances in alternative heating and cooling systems, shedding light on their potential to revolutionize the way we manage indoor climate control [1]. By harnessing renewable energy sources and cutting-edge scientific principles, these innovative technologies have the capacity to substantially reduce energy consumption, lower greenhouse gas emissions, and contribute to a more sustainable future. The scope of this review encompasses a wide array of cutting-edge

**ADVANCES IN CONTROL SYSTEMS FOR UNMANNED UNDERWATER VEHICLES
(UUVS) - A REVIEW****Gurpreet Singh¹ Aman Gupta²,**¹ Assistant Professor, Department of Mechanical Engineering, Swami Vivekanand Institute of Engineering & Technology, Banur, Punjab-140601²Assistant Professor, Department of Mechanical Engineering, Swami Vivekanand Institute of Engineering & Technology, Banur, Punjab-140601**Abstract:**

Unmanned Underwater Vehicles (UUVs) have gained significant attention in recent years due to their diverse applications in various fields, such as scientific research, marine exploration, and defense operations. The fundamental challenges associated with controlling UUVs, including underwater navigation, communication limitations, and energy constraints. It then proceeds to discuss the evolution of control techniques, ranging from traditional manual control to modern autonomous systems. One major area of advancement is in the development of navigation and localization algorithms. Researchers have explored various approaches, including inertial navigation systems, acoustic-based positioning, and simultaneous localization and mapping (SLAM) techniques. These advancements have significantly improved UUVs' ability to navigate complex underwater environments with accuracy and robustness. Another key aspect of UUV control systems is mission planning and decision-making. The review delves into the progress made in developing intelligent algorithms for path planning, obstacle avoidance, and adaptive control. These advancements enable UUVs to autonomously plan and execute missions, adapting to dynamic environments and unexpected scenarios. It highlights the utilization of advanced sensing technologies, such as sonar systems, cameras, and multi-sensor fusion, which enable UUVs to perceive and interact with their surroundings effectively. These sensors provide crucial feedback for control algorithms, enhancing situational awareness and enabling precise control and manipulation tasks.

Keywords: Unmanned Underwater Vehicles (UUVs), Control Systems, Maneuverability, Operational Efficiency, Navigation, Localization, Inertial Navigation Systems, Acoustic-based Positioning, Simultaneous Localization and Mapping (SLAM), Mission Planning.

Introduction:

Unmanned Underwater Vehicles (UUVs) have emerged as invaluable tools for a wide range of underwater operations. As technology has advanced, so too have the control systems that govern the behavior and functionality of these autonomous underwater vehicles. The development of efficient and reliable control systems for UUVs is crucial to enhancing their autonomy, maneuverability, and operational efficiency [1]. One of the primary challenges in controlling UUVs is achieving accurate navigation and localization. Underwater environments pose unique difficulties due to limited visibility, communication constraints, and the dynamic nature of the surrounding water. Over the years, researchers have developed various navigation and localization algorithms to address these challenges. These include inertial navigation systems, acoustic-based positioning, and simultaneous localization and mapping (SLAM) techniques, among others. The advancements in these algorithms have significantly improved UUVs' ability to navigate with precision and maintain situational awareness underwater. Furthermore, control systems for UUVs have witnessed remarkable progress in mission planning and decision-making capabilities. Intelligent algorithms have been developed to enable UUVs to



**ADVANCES IN RENEWABLE ENERGY CONVERSION AND STORAGE SYSTEMS - A
COMPREHENSIVE REVIEW**

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Abstract:

Renewable energy sources have emerged as promising alternatives to traditional fossil fuels in recent years due to their environmental sustainability and potential for long-term energy security. Firstly, the field of solar energy conversion has witnessed significant progress. Photovoltaic (PV) technology has experienced remarkable improvements in efficiency and cost reduction, driven by innovations such as multi-junction solar cells, perovskite materials, and tandem cell configurations. Furthermore, the integration of PV systems with energy storage technologies, such as lithium-ion batteries and emerging alternatives like flow batteries and supercapacitors, has enhanced the overall reliability and dispatchability of solar energy. Secondly, wind energy conversion systems have benefited from advancements in turbine design and control strategies. The development of larger, more efficient wind turbines, including offshore installations, has increased the capacity and reliability of wind power generation. Moreover, the integration of advanced power electronics and energy management systems has facilitated better grid integration and improved the overall performance of wind farms. The development of bioenergy conversion technologies have contributed to the diversification of renewable energy sources. Biomass-derived fuels, such as bioethanol and biodiesel, have gained attention as viable alternatives to fossil fuels in the transportation sector. The energy storage systems have played a crucial role in addressing the intermittency and variability of renewable energy sources. Battery technologies, in particular, have seen significant improvements in terms of energy density, cycle life, and cost reduction. Additionally, emerging technologies like hydrogen storage, compressed air energy storage and thermal energy storage offer promising alternatives for long-duration and large-scale energy storage applications.

Keywords: Renewable energy, Energy conversion, Energy storage systems, Solar energy, Photovoltaic (PV) technology, Wind energy, Turbine design

Introduction:

The increasing concerns over climate change, coupled with the growing demand for energy, have spurred significant interest in renewable energy conversion and storage systems. Renewable energy sources, such as solar, wind, and bioenergy, offer sustainable alternatives to traditional fossil fuels, mitigating greenhouse gas emissions and reducing reliance on finite resources. In recent years, significant advancements have been made in the field of renewable energy, focusing on improving energy conversion efficiency, enhancing energy storage

**ADVANCES IN THERMAL MANAGEMENT TECHNIQUES FOR ELECTRONIC
DEVICES: A REVIEW****Supinderjit Singh¹ Dhiraj Parkash Dhiman²,**

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Abstract:

With the ever-increasing demand for smaller, faster, and more powerful electronic devices, thermal management has emerged as a critical challenge. The efficient dissipation of heat generated by electronic components is essential to ensure their reliable operation, prevent performance degradation, and extend their lifespan. There are fundamental aspects of thermal management, including heat generation mechanisms in electronic devices and the thermal resistance pathway. It then presents an overview of traditional cooling methods, such as air cooling, liquid cooling, and heat sinks, along with their associated advantages and limitations. Furthermore, it delves into emerging techniques that have gained significant attention in recent years. The first set of emerging techniques focuses on passive cooling approaches, such as phase change materials, heat pipes, and thermoelectric coolers. These methods leverage the unique properties of materials to enhance heat dissipation without relying on active components. The second set of techniques explores active cooling methods, including microchannel cooling, jet impingement, and thermosyphons. These approaches involve the utilization of pumps, fans, or other active components to enhance heat transfer. It highlights advancements in thermal interface materials, which plays a vital role in reducing thermal resistance between the device and its cooling solutions. It presents an overview of various interface materials, such as thermal pastes, greases, and advanced nano-composites, and evaluates their thermal conductivity, reliability, and compatibility with different substrates.

Keywords: Thermal management, Electronic devices, Heat dissipation, Cooling techniques, Passive cooling, Active cooling, Phase change materials, Heat pipes, Thermoelectric coolers, Microchannel cooling, Jet impingement, Thermosyphons

Introduction:

The rapid advancement of electronic devices in terms of their size, processing power, and functionality has led to an exponential increase in heat generation within these devices. Efficient thermal management has become a critical concern to ensure their reliable operation, prevent performance degradation, and extend their lifespan. As electronic components continue to shrink in size and pack more power, the need for innovative thermal management techniques becomes even more imperative [1]. Traditional cooling methods such as air cooling, liquid cooling, and heat sinks are then discussed, highlighting their advantages and limitations. While these methods have been widely used and are well-established, they may not always be sufficient to meet the growing demands of high-power electronic devices. It elucidates the mechanisms of heat generation in electronic devices and the thermal resistance pathway, emphasizing the need for efficient heat dissipation strategies. Subsequently, traditional cooling methods such as air cooling, liquid cooling, and heat sinks are examined in terms of their advantages, limitations, and application scenarios. This prompts the exploration of alternative approaches that can address the



AN ANALYSIS OF GLOBAL WARMING'S IMPACT AND POTENTIAL CONSEQUENCES

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Abstract:

The concentration of greenhouse gases (carbon dioxide, methane, and nitrous oxide) in the atmosphere, which is mostly ascribed to human activity, is now commonly referred to as global warming. Evidence suggests that the origins and effects of global warming has been the subject of a heated and frequently emotive debate for many years. Despite of the fact that the causes are still hotly contested and lack widespread agreement among supporters, the data points to rising global warming. Now that it is happening, it is no longer a prediction. Major warning signs include the extinction of several species, population shifts and migration, desertification, starvation, drought, and persistent food insecurity. Political differences and conflicts of interest among governments, scientists, and politicians prevent everyone from agreeing on how to mitigate global warming. There is a compelling case in the scientific literature that recent changes in the climate are primarily due to human-induced emissions of greenhouse gases, which have exacerbated global warming. However, opponents of anthropogenic global warming at the other extreme vehemently contend that the cause of global warming is natural and that humans have only a small impact on it. Because of this, the problem of global warming is projected to be at the top of the international political agenda and becomes one of the greatest political, institutional, and environmental challenges of our time. Discussion of the arguments between the political and scientific sectors over the origins and effects of global warming is the study's overarching goal. In this context, a survey of pertinent literature related to the discussions of global warming is conducted. Last but not the least, global warming is a fact rather than a prediction. Along with reducing harmful greenhouse gas emissions, alternative efforts like climate change adaptation and/or mitigation measures must be given top attention. A review of global warming and its causes and effects is the focus of this paper.

Keywords: Global warming, climate change, temperature, fossil fuel, Disease

Introduction:

Global warming and climate change refer to an increase in average global temperatures. Natural events and human activities are believed to be main contributors to such increases in average global temperatures.

The climate change, caused by rising emissions of carbon dioxide from vehicles, factories, and power stations, will not only affects the atmosphere and the sea but also will alter the geology of the Earth. Emissions of carbon dioxide due to our use of fossil energy will change the climate and the temperature is estimated to increase by 2 to 6o Celsius within year 2100, which is a tremendous increase from our current average temperature of 1.7o

APPLICATIONS OF INDUSTRIAL ROBOTICS DESIGN- A REVIEW

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Abstract:

Industrial robotics has revolutionized various industries by enhancing productivity, efficiency, and safety in manufacturing processes. The review encompasses the automotive industry, where robots have been extensively employed for tasks such as welding, painting, and assembly. Additionally, the electronics industry has witnessed the integration of robotics in handling delicate components and performing precision tasks. The pharmaceutical sector has also benefited from robotic systems for drug dispensing, packaging, and quality control. There are applications of industrial robotics in the food and beverage industry, including tasks such as sorting, picking, and packaging. The logistics and warehousing sectors have witnessed the adoption of robotics for automated material handling and order fulfillment, leading to improved efficiency and reduced operational costs. It also delves into the advancements in collaborative robotics, where robots work alongside human operators, enabling enhanced productivity and safety in areas such as healthcare, rehabilitation, and assistive tasks for individuals with disabilities. The emerging trends in industrial robotics design, including the integration of artificial intelligence, machine learning, and computer vision technologies. These advancements enable robots to adapt to dynamic environments, recognize objects, and make autonomous decisions. It highlights the extensive range of applications and benefits of industrial robotics design in diverse industries. These include increased productivity, improved product quality, enhanced workplace safety, reduced labor costs, and efficient resource utilization.

Keywords: Industrial robotics, Robotics design, Manufacturing industry, Automotive industry, Electronics industry, Pharmaceutical industry, Logistics and warehousing, Collaborative robotics, Artificial intelligence, Machine learning

Introduction:

Industrial robotics has become a transformative force in various sectors, revolutionizing manufacturing processes and driving improvements in productivity, efficiency, and safety. Industrial robots are programmable machines designed to perform a range of tasks in industrial settings. They are equipped with advanced sensors, actuators, and control systems, enabling them to execute complex operations with precision and speed [1]. These robots have proven to be valuable assets in streamlining operations, reducing human error, and enhancing overall efficiency. One of the prominent industries that extensively utilize industrial robotics is automotive manufacturing. Robots are employed for tasks such as welding, painting, and assembly, which require high precision and repetitive actions. By automating these processes, manufacturers can achieve consistent quality, increased production rates, and improved safety for workers. The electronics industry is another sector where industrial robotics design has made significant strides. These robots are adept at handling delicate components, performing intricate soldering tasks, and conducting quality inspections with high accuracy. The integration of robotics in electronics manufacturing has led to faster production cycles, improved product quality, and reduced



BARRIERS AND CHALLENGES OF ELECTRIC VEHICLES IN INDIA

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Abstract:

Despite substantial research on the characteristics and features of electric vehicles as well as the make-up of their charging infrastructure, production and network modeling of electric vehicles are still restricted and subject to change. In the paper, different modeling techniques and optimization methods are discussed as they are used to analyses of the market penetration rates of battery electric vehicles, hybrid electric vehicles, plug-in hybrid electric vehicles, and electric automobiles. The study is exceptional for a developing country like India because it addresses significant obstacles including a lack of adequate charging infrastructure. The revolutionary concept of "vehicle-to-grid" has enabled the creation of a backup power supply for times when renewable energy sources are not available. We conclude that taking into account the distinctive characteristics of electric vehicles is essential to their mobility.

Keywords: Electric vehicle, global, influence, world, Electric cars

Introduction:

The automotive sector has grown to become one of the most significant global industries, both economically and in terms of R&D. More technology components are being added to automobiles in an effort to increase the safety of both passengers and pedestrians. Additionally, there are more cars on the roads, which makes it possible for us to travel quickly and pleasantly. However, this has resulted in a sharp rise in the amount of air pollutants in metropolitan areas, including sulfur dioxide (SO₂), nitrogen oxides (NO_X), carbon monoxide (CO), and particulate matter (PM).

Additionally, a report by the European Union claims that the transportation sector is accountable for almost 28% of all CO₂ emissions, whereas the road transport is accountable for over 70% of the transport sector emissions.[1]

In order to reduce the concentration of air pollutants, CO₂, and other greenhouse gases, the governments of the majority of developed nations are promoting the usage of electric vehicles (EVs). More specifically, they

HYDROGEN FUEL CELL TECHNOLOGY FOR TRANSPORTATION APPLICATIONS: A COMPREHENSIVE REVIEW**Kapil Munjal¹ Gurpreet Singh²,**

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Abstract:

Hydrogen has emerged as a new energy vector beyond its usual role as an industrial feedstock, primarily for the production of ammonia, methanol, and petroleum refining. Hydrogen fuel cell technology has gained significant attention as a promising alternative for transportation applications due to its potential to mitigate greenhouse gas emissions and address the challenges associated with conventional fossil fuel-based vehicles. It can offer the prospect of supplying the world with clean, sustainable electrical power to overcome the increase in pollution and greenhouse gases. The basic principles of fuel cells, focusing on proton exchange membrane fuel cells (PEMFCs) and solid oxide fuel cells (SOFCs), which are commonly used in transportation applications. It highlights the electrochemical reactions involved in the conversion of hydrogen and oxygen into electricity, and the advantages of using fuel cells, such as high energy efficiency and zero-emission operation. The key components of a hydrogen fuel cell system, including fuel cell stacks, hydrogen storage systems, and power electronics. Various hydrogen production methods, such as steam methane reforming, electrolysis, and biomass gasification, are explored in detail, with an emphasis on their sustainability and environmental impacts. The application of hydrogen fuel cell technology in different transportation sectors, including passenger vehicles, buses, trucks, and trains. The cost analysis includes the manufacturing of fuel cell components, hydrogen production, infrastructure development, and the total cost of ownership of fuel cell vehicles compared to conventional vehicles.

Keywords: Hydrogen fuel cell, Proton exchange membrane fuel cell (PEMFC), Solid oxide fuel cell (SOFC), Electrochemical reactions, Energy efficiency, Zero-emission vehicles, Fuel cell stacks, Hydrogen storage systems, Power electronics

Introduction:

The increasing concerns over climate change and the need for sustainable transportation have prompted significant research and development in alternative fuel technologies. Among these alternatives, hydrogen fuel cell technology has emerged as a promising solution with the potential to revolutionize the transportation sector. Hydrogen fuel cells offer a clean and efficient way to convert chemical energy into electricity, with water being the only byproduct [1]. This comprehensive review aims to provide an in-depth analysis of hydrogen fuel cell technology for transportation applications, encompassing various aspects such as principles of fuel cells, system components, hydrogen production methods, application in different transportation sectors, economic feasibility, and future prospects. Fuel cells are electrochemical devices that convert the chemical energy of hydrogen and oxygen into electrical energy, heat, and water. There are two types of fuel cells commonly used in transportation: proton exchange membrane fuel cells (PEMFCs) and solid oxide fuel cells (SOFCs). PEMFCs are well-suited for light-duty vehicles due to their quick startup and high power density, while SOFCs are more suitable for

RECENT DEVELOPMENTS IN MICROFLUIDICS AND LAB-ON-A-CHIP DEVICES

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Abstract:

Microfluidics and lab-on-a-chip devices have witnessed significant advancements in recent years, revolutionizing the field of biomedical research, diagnostics, and healthcare. Microfluidics involves the manipulation and control of minute volumes of fluids in channels and chambers with dimensions on the micrometer scale. Lab-on-a-chip devices, on the other hand, integrate multiple laboratory functions, such as sample preparation, analysis, and detection, onto a single chip or platform. The combination of microfluidics and lab-on-a-chip technologies has enabled the development of compact, portable, and cost-effective analytical systems with enhanced performance. Recent advancements have focused on improving the functionality and versatility of microfluidic devices. Researchers have developed novel methods for fluid handling, including droplet-based microfluidics, which enables high-throughput single-cell analysis and precise reaction control. Furthermore, the integration of microvalves, pumps, and sensors has facilitated automation and real-time monitoring of fluid flow, enabling complex biochemical assays and point-of-care diagnostics. The field of microfluidics has also witnessed advancements in material science, with the development of new materials that offer enhanced biocompatibility, durability, and optical transparency. These materials, such as hydrogels and thermoplastics, have enabled the fabrication of microfluidic devices with complex three-dimensional structures and integrated functional components, opening new avenues for tissue engineering, drug discovery, and personalized medicine.

Keywords: Microfluidics, Lab-on-a-chip devices, Biomedical research, Diagnostics, Healthcare, Fluid handling

Introduction:

Microfluidics and lab-on-a-chip devices have emerged as powerful technologies with the potential to revolutionize biomedical research, diagnostics, and healthcare. These fields have witnessed remarkable advancements in recent years, driven by breakthroughs in fluid handling techniques, materials science, and detection methods [1]. Microfluidics involves the precise manipulation and control of tiny volumes of fluids in microscale channels, while lab-on-a-chip devices integrate multiple laboratory functions onto a single chip or platform. Together, they offer compact, portable, and cost-effective solutions for various analytical and diagnostic applications. The rapid progress in microfluidics and lab-on-a-chip devices has unlocked new possibilities in biomedical research [2]. Furthermore, the integration of microvalves, pumps, and sensors into microfluidic systems has automated complex biochemical assays, reducing human error and enhancing reproducibility. Material science has played a crucial role in the advancement of microfluidics and lab-on-a-chip devices. Novel materials, such as hydrogels and thermoplastics, offer improved biocompatibility, mechanical strength, and optical transparency. These materials enable the fabrication of intricate microfluidic structures, including three-dimensional networks and microfluidic organs-on-chips. The integration of functional components, such as sensors



RECENT TRENDS IN COMBINED CYCLE POWER PLANTS: A COMPREHENSIVE REVIEW

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Abstract:

Combined cycle power plants (CCPPs) have gained significant attention in recent years as a viable solution to meet the increasing global demand for electricity while minimizing environmental impacts. One prominent trend in CCPP technology is the development of more efficient and flexible plant designs. Advanced gas turbines with higher operating temperatures and improved turbine blade materials have enabled higher thermal efficiencies and increased power output. Additionally, the integration of heat recovery steam generators (HRSGs) and steam turbines in CCPPs has further improved overall plant efficiency by utilizing waste heat from the gas turbine exhaust to generate additional power. Another significant trend in CCPPs is the integration of renewable energy sources. With the growing emphasis on sustainability and carbon emissions reduction, CCPPs have started incorporating renewable energy technologies such as solar thermal collectors, biomass boilers, or geothermal heat sources. These hybrid systems not only enhance the overall efficiency of the plant but also provide a means to balance the intermittent nature of renewable energy generation. Advanced control and optimization techniques are also playing a crucial role in improving the operational performance of CCPPs. Model-based predictive control algorithms, machine learning, and artificial intelligence methods are being employed to optimize plant operation, improve load following capabilities, and reduce emissions. These techniques enable operators to adapt the plant's operation in real-time based on electricity demand, fuel prices, and environmental constraints.

Keywords: Combined cycle power plants, CCPP, Plant design, efficiency, Flexibility, Gas turbines, Thermal efficiency, Power output, Heat recovery steam generators, Steam turbines, Renewable energy sources, Solar thermal collectors

Introduction:

Combined cycle power plants (CCPPs) have emerged as a prominent and efficient solution for meeting the ever-increasing global demand for electricity while minimizing environmental impacts. With a unique integration of gas turbines and steam turbines, CCPPs have gained significant attention in recent years for their ability to achieve high thermal efficiencies and operational flexibility [1]. CCPPs harness the benefits of two distinct power generation cycles: the Brayton cycle, which operates with a gas turbine, and the Rankine cycle, which utilizes a steam turbine. Gas turbines combust a fuel source, such as natural gas or diesel, to generate mechanical energy, which is then converted into electrical energy through a generator. The hot exhaust gases



RENEWABLE ENERGY AND SUSTAINABLE DEVELOPMENT: A CRUCIAL REVIEW

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Abstract:

Our society depends on energy to maintain our standard of living and to support all other aspects of our economy. Technologies for generating clean, abundant energy from naturally regenerating resources including the sun, wind, earth, and plants are offered by renewable energy technologies. Almost every region in the United States and the entire planet has access to renewable resources of some kind. Currently, 10% of the energy used in the United States comes from renewable sources, primarily hydropower and conventional biomass. Technologies including wind, solar, biomass, and geothermal energy are becoming increasingly cost-effective in a variety of industries and taking significant strides towards broader commercialization. Each renewable energy technology is in a different stage of research, development, and commercialization. They also differ in terms of predicted costs for the present and the future, the existing industrial base, the availability of resources, and any potential effects on greenhouse gas emissions. The technological state, price, and applications of the main renewable energy technologies will be examined, along with any implications for a rise in the use of renewable energy.

Keywords: Renewable Energy, Electricity, Sources, Economic, Power

Introduction:

One third of the world's greenhouse gas emissions are attributable to the sources used to produce power, such as coal, oil, and natural gas. Elevating the standard of living requires the provision of cleaner and more dependable electricity. India's need for energy is rising as a result of the country's current economic growth initiatives. An essential condition for a nation's economy to grow is the provision of increasing amounts of energy. The National energy Plan (NEP), created by the Ministry of Power (Mop), includes a 10-year detailed action plan with the goal of providing energy throughout the nation. It has also created a second plan to guarantee that power is given to the population effectively and at a fair price. In the World Resource Institute's 2017 report, India came in fourth place, after China (26.83%), the USA (14.36%), and the EU (9.66%), with almost 6.65% of the world's total carbon emissions. The natural equilibrium of the planet may also change as a result of climate change. The United Nations Framework Convention on Climate Change (UNFCCC) and the Paris Agreement have both received submissions of intended national voluntarily determined contributions (INDCs).

**REVIEW OF ADVANCES IN MACHINE LEARNING AND ARTIFICIAL INTELLIGENCE
FOR PREDICTIVE MAINTENANCE****Navjot Inder Singh¹ Prince Chawla²,**

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Abstract:

Predictive maintenance has emerged as a vital approach to optimize the reliability and performance of complex industrial systems. Along with the traditional equipment maintenance which uses a periodic schedule instead of reacting to equipment failures, predictive maintenance predicts failure of equipment. Adopting a suitable and reliable predictive maintenance strategy for equipment like automobile part manufacturing machines has remained a difficulty for industry. With the rapid advancements in machine learning and artificial intelligence (AI), researchers and practitioners have leveraged these technologies to develop innovative solutions for predictive maintenance. It highlights the importance of data collection and preprocessing, as well as the need for feature engineering to extract relevant information from the raw sensor data. Various machine learning algorithms, including traditional techniques such as regression, decision trees, and support vector machines, as well as more advanced methods like deep learning and ensemble learning, are presented in the context of predictive maintenance. The integration of AI techniques into predictive maintenance is then explored. This includes the utilization of natural language processing (NLP) and computer vision to enhance the analysis of textual and visual data, respectively. The review addresses the challenges associated with the implementation of machine learning and AI models in real-world predictive maintenance systems such as data quality, scalability, interpretability, and model explainability, and presents potential solutions and best practices.

Keywords: Predictive maintenance, machine learning, artificial intelligence, data preprocessing, regression, decision trees, support vector machines, deep learning, ensemble learning, natural language processing

Introduction:

In today's highly competitive and technologically driven world, industries and organizations are increasingly turning to predictive maintenance strategies to ensure the optimal performance and reliability of their critical assets. Predictive maintenance involves the use of advanced data analytics and modeling techniques to predict and prevent equipment failures, minimizing unplanned downtime and reducing maintenance costs [1]. Machine learning and artificial intelligence (AI) have emerged as key enablers in the field of predictive maintenance. These technologies have revolutionized the way data is analyzed, patterns are discovered, and predictions are made. By harnessing the power of machine learning algorithms and AI models, organizations can proactively identify potential equipment failures, prioritize maintenance activities, and optimize maintenance schedules. This review aims to provide a comprehensive overview of the recent advances in machine learning and AI techniques specifically tailored for predictive maintenance applications. It delves into the fundamental concepts and challenges associated with predictive maintenance, emphasizing the criticality of data collection, preprocessing, and feature engineering in extracting meaningful insights from sensor data. A range of machine learning



UNMANNED AERIAL VEHICLES (UAVS) AND THEIR APPLICATIONS: A REVIEW

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Abstract:

Unmanned Aerial Vehicles (UAVs), also known as drones, have emerged as versatile and innovative tools with a wide range of applications across various industries. UAVs are aircraft that operate without an onboard human pilot, controlled remotely or autonomously through pre-programmed flight plans. The development of UAVs can be traced back to their military origins, where they were primarily used for surveillance and reconnaissance purposes. UAVs have evolved to become highly sophisticated systems capable of performing complex tasks. Their compact size, maneuverability, and ability to reach areas that are difficult for humans to access make them ideal for numerous civilian applications. UAVs have gained significant traction in the fields of aerial photography and videography, enabling stunning visuals and perspectives in various industries such as filmmaking, real estate, and tourism. Additionally, UAVs have proven invaluable in disaster management and humanitarian efforts, providing rapid and efficient response capabilities for search and rescue operations, damage assessment, and the delivery of critical supplies to remote or inaccessible locations. UAVs have also found widespread use in agriculture, where they offer farmers a cost-effective means of monitoring crops, collecting data on soil conditions, and applying targeted treatments. This technology has the potential to optimize farming practices, improve crop yields, and minimize the use of pesticides and fertilizers, thereby contributing to sustainable agriculture.

Keywords: Unmanned Aerial Vehicles (UAVs), Drones, Military, Surveillance, Reconnaissance, Aerial photography, Videography, Disaster management

Introduction:

Unmanned Aerial Vehicles (UAVs) which are drones or aircraft, have emerged as one of the most transformative and versatile technologies of the modern era. These unmanned flying machines, initially developed for military applications, have undergone significant advancements, opening up a plethora of opportunities in various industries and sectors. By eliminating the need for onboard human pilots, UAVs have revolutionized the way we approach tasks that were once limited by physical barriers and high costs. The roots of UAVs can be traced back to the early 20th century when they were experimented with for military reconnaissance purposes. Since then, rapid technological progress has equipped these aerial vehicles with sophisticated sensors, autonomous navigation capabilities, and extended flight durations [1]. The combination

A COMPARATIVE STUDY OF ONLINE AND OFFLINE SHOPPING

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Abstract:

One of the industries in India that is expanding the fastest is retail. It is a pillar of the economy and contributes roughly 10% of the nation's GDP. The Indian retail market is one of the top five retail markets in the world according to economic value, with an estimated worth of US\$600 billion. India has one of the fastest growing retail sectors in the world. Indian customers have high standards for the goods they purchase. Customers' preferences for online versus offline purchasing influence the choices they make. Shopping on the internet and in stores each has benefits and drawbacks. Long distance travel is not necessary, there is a greater selection, it is available around-the-clock, there are significant discounts offered, and the option of customer evaluations is expanded with online purchasing. On the other side, shoppers may personally inspect things when buying traditionally, which is not possible when shopping online. Customers may use both the traditional and online modes of buying depending on their preferences at a given time, resulting in fundamentally different behaviors between the two. The purpose of this paper is to shed some light on the distinctions between physical and internet shopping habits.

Keywords: Consumer Buying Behavior, Online Buying Behavior, Offline Buying Behavior, Brick and Mortar Stores

Introduction:

Consumer behavior is the study of people, groups, or organizations and the methods they employ to choose, secure, and discard goods, experiences, ideas, or services in order to meet wants, as well as the effects that these methods have on the consumer and society. Technology has altered the way people shop, giving consumers additional alternatives with the introduction of online shopping. In order to maximize benefits, numerous retail behemoths combined the two methodologies, giving this trend centre stage throughout the previous ten years. The goal of this study is to comprehend how online and in-person shopping differs from one another. If the elements influencing the choice to make a purchase are disregarded or misinterpreted, it will be impossible to gain a critical grasp of consumer behavior in the virtual environment as well as in the real one. One specific issue that is thought to influence purchasing decisions, for example, is

ACHIEVING SUSTAINABLE CONSTRUCTION WASTE MANAGEMENT THROUGH APPLICATION OF 3R (REDUCTION, REUSE, RECYCLING): A LIFECYCLE APPROACH

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Abstract:

Construction activities generate a substantial amount of waste, making effective waste management a pivotal element in achieving sustainability in the construction industry. This paper explores the application of the 3R (Reduce, Reuse, Recycle) principle within the context of construction waste management, employing a comprehensive lifecycle approach. By integrating the principles of the 3R framework at every stage of the construction process, from design and procurement to demolition and disposal, the study aims to mitigate the environmental and economic impacts associated with construction waste. The need for processes, strategies, rating systems and policies for robust and efficient waste management is widely recognized. The paper aims to evaluate. The paper review current practices and regulations related to construction waste management and present a framework for implementing the 3R approach throughout the entire lifecycle of a construction project. This includes strategies for reducing waste generation through sustainable design and material selection, opportunities for reusing materials on-site, and methods for efficiently recycling construction waste. Key case studies and examples are examined to highlight successful implementations of the 3R principles, showcasing the potential environmental benefits and cost savings that can be achieved. Furthermore, the paper evaluates the environmental and economic implications of adopting a 3R-based construction waste management approach, emphasizing the long-term sustainability of such practices. By reducing the ecological footprint of construction projects, improving resource efficiency, and minimizing waste sent to landfills, the 3R framework offers a promising pathway toward sustainable construction practices.

Keywords: Sustainable construction, Construction waste management, 3R principle, Reduce, Reuse, Recycle, Lifecycle approach, Environmental impact, Economic implications, Sustainable design, Material selection

Introduction:

The construction industry has long been a crucial driver of economic growth and infrastructure development around the world. However, it is also a significant contributor to environmental

EFFICIENT WATER MANAGEMENT IN URBAN AREAS: SUSTAINABLE WATER SUPPLY AND WASTEWATER TREATMENT

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Abstract:

Urbanization is rapidly increasing, and with it comes the critical challenge of managing water resources efficiently in urban areas. This abstract provides an overview of the key elements involved in achieving sustainable water supply and wastewater treatment within urban environments. In urban areas, ensuring a reliable and sustainable water supply is fundamental to meeting the needs of growing populations. Efficient water supply management involves optimizing water sources, distribution systems, and storage facilities. Advanced technologies such as smart metering, demand forecasting, and water recycling are playing pivotal roles in achieving water supply sustainability. These technologies help reduce water losses, improve distribution efficiency, and ensure equitable access to clean water. Wastewater treatment is equally essential for urban sustainability. Proper wastewater management not only safeguards public health but also protects the environment. Advanced treatment processes, including biological treatment, membrane filtration, and nutrient removal, enhance the quality of treated wastewater and reduce its environmental impact. Moreover, the concept of water-energy nexus is gaining importance, highlighting the interconnectedness of water and energy resources. Urban areas are increasingly adopting energy-efficient wastewater treatment technologies to minimize carbon emissions and reduce operational costs. Sustainable water management also encompasses stormwater management and green infrastructure. Implementing techniques such as permeable pavements, green roofs, and urban wetlands helps mitigate the adverse effects of urbanization on natural water systems, reduce flooding, and improve water quality. Effective governance and policy frameworks are critical in achieving sustainable water management in urban areas.

Keywords: Urbanization, Water management, Sustainable water supply, Wastewater treatment, Water resources, Smart metering, Demand forecasting, Water recycling, Water distribution, Water losses, Water quality

Introduction:

As the world becomes increasingly urbanized, efficient water management in urban areas emerges as a pressing challenge with far-reaching implications for both human well-being and

INNOVATIONS IN ENERGY-EFFICIENT BUILDING SYSTEMS AND HVAC DESIGN

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Abstract:

In the face of growing environmental concerns and the increasing demand for sustainable and energy-efficient solutions, the field of building systems and HVAC (Heating, Ventilation, and Air Conditioning) design has witnessed a remarkable evolution. This abstract provides an overview of key innovations in energy-efficient building systems and HVAC design, highlighting their potential to reshape the future of the construction industry and contribute to a greener, more sustainable world. Energy-efficient building systems encompass a broad spectrum of technologies and strategies that aim to minimize energy consumption while maintaining or even improving indoor comfort and air quality. Advances in insulation materials, smart windows, and high-performance building envelopes have led to significant reductions in heat gain and loss. Building-integrated photovoltaics (BIPV) and innovative energy management systems allow buildings to generate and optimize their energy use, thereby reducing their reliance on fossil fuels. Moreover, the integration of renewable energy sources, such as solar panels and wind turbines, into building design is becoming increasingly common. HVAC systems play a pivotal role in a building's energy consumption and occupant comfort. Recent innovations in this field include the development of highly efficient heat pumps and air conditioning units that use low-GWP (Global Warming Potential) refrigerants to minimize their environmental impact. Smart HVAC controls equipped with artificial intelligence (AI) algorithms can predict occupancy patterns and adjust heating and cooling accordingly, resulting in substantial energy savings. Additionally, demand-controlled ventilation systems optimize air exchange rates based on real-time occupancy and indoor air quality data.

Keywords: Energy-efficient buildings, HVAC innovation, Sustainable construction, Building envelopes, Insulation materials, Building-integrated photovoltaics (BIPV), Renewable energy integration

Introduction:

In the contemporary world, the quest for sustainability has become an imperative, and nowhere is this more evident than in the realm of construction and building design. As populations swell,

RENEWABLE ENERGY INTEGRATION INTO CIVIL INFRASTRUCTURE

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Abstract:

The integration of renewable energy sources into civil infrastructure represents a transformative shift in the energy landscape, driven by the urgent need to address climate change and reduce greenhouse gas emissions. This abstract provides a concise overview of the key facets and challenges associated with the incorporation of renewable energy technologies into civil infrastructure. Renewable energy integration encompasses a wide spectrum of technologies, including solar photovoltaics, wind turbines, hydroelectric generators, and emerging technologies like tidal and geothermal energy. These technologies are increasingly being integrated into civil infrastructure, including buildings, transportation systems, and utilities, with the aim of achieving energy efficiency, resilience, and sustainability. One of the primary motivations for renewable energy integration is the reduction of carbon emissions. By harnessing clean energy sources, civil infrastructure can reduce its reliance on fossil fuels, thus mitigating the environmental impacts associated with traditional energy generation. Moreover, renewable energy systems can often be designed to complement existing infrastructure, maximizing energy generation potential while minimizing disruption to urban environments. However, integrating renewable energy into civil infrastructure is not without challenges. These challenges include intermittency, storage, grid compatibility, and cost-effectiveness. Renewable energy sources are often intermittent, dependent on factors like weather conditions and sunlight. To address this, energy storage solutions such as batteries and innovative grid management techniques are essential for maintaining a reliable power supply.

Keywords: Renewable Energy, Civil Infrastructure, Sustainability, Climate Change Mitigation, Energy Integration, Solar Photovoltaics, Wind Turbines, Hydroelectric Generation

Introduction:

It has emerged as a pivotal strategy in the global pursuit of sustainability and the mitigation of climate change. This transformative approach seeks to leverage the power of clean, renewable energy technologies to revolutionize the way our cities, buildings, transportation systems, and utilities operate. The urgency of reducing greenhouse gas emissions and transitioning away from

REVOLUTIONIZING TRANSPORTATION ENGINEERING: AN AUTONOMOUS VEHICLES AND INFRASTRUCTURE

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Abstract:

The field of transportation engineering is undergoing a profound transformation driven by the advent of autonomous vehicles (AVs) and their integration with advanced infrastructure systems. This paper explores the revolutionary impact of AV technology on transportation engineering and the infrastructure that supports it. Autonomous vehicles promise to revolutionize transportation by enhancing safety, efficiency, and sustainability. They have the potential to reduce traffic congestion, decrease the number of accidents, and optimize traffic flow. To fully realize these benefits, however, a comprehensive approach that encompasses both AVs and infrastructure is necessary. This paper discusses the critical role of infrastructure in enabling AVs to operate effectively. It examines the development of smart infrastructure, including advanced sensor networks, dedicated AV lanes, and intelligent traffic management systems, to support AV deployment. Additionally, the paper delves into the challenges and opportunities in retrofitting existing infrastructure to accommodate AVs, ensuring seamless connectivity, and addressing cybersecurity concerns. Furthermore, the paper explores the implications of AVs on transportation planning, urban design, and sustainability. It discusses the potential for reduced parking requirements, changes in urban mobility patterns, and the environmental benefits of AVs through reduced emissions and optimized energy consumption. The integration of AVs and infrastructure also poses regulatory and ethical challenges that must be addressed. This paper discusses the need for a legal framework that governs AV operation, liability, and data privacy, ensuring that the technology is deployed safely and responsibly. It emphasizes the need for a holistic approach that considers both AV technology and infrastructure development to create a safer, more efficient, and sustainable transportation system for the future.

Keywords: Autonomous Vehicles (AVs), Transportation Engineering, Infrastructure, Smart Infrastructure, Traffic Management, Safety, Efficiency, Sustainability, Traffic Congestion, Retrofitting

ROLE OF ARTIFICIAL INTELLIGENCE IN THE CONSTRUCTION INDUSTRY

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Abstract:

The construction industry, traditionally characterized by its labor-intensive processes and complex project management, has witnessed a transformative shift with the integration of Artificial Intelligence (AI). This abstract delves into the evolving role of AI in the construction sector, highlighting its profound impact on project efficiency, safety, sustainability, and decision-making. AI technologies, including machine learning, computer vision, and natural language processing, have revolutionized construction project management. AI-driven predictive analytics enable more accurate project scheduling and cost estimation, minimizing delays and budget overruns. Additionally, AI-based algorithms help identify potential risks and vulnerabilities early in the project life cycle, allowing for proactive mitigation strategies. Safety in construction has been greatly enhanced through AI-driven solutions. Smart sensors and wearable devices, coupled with AI algorithms, can monitor worker behavior, assess environmental conditions, and predict potential hazards. Real-time alerts and automated responses ensure a safer working environment, reducing accidents and improving overall construction site safety. Sustainability is another critical facet where AI plays a pivotal role. AI-driven building management systems optimize energy consumption, reduce waste, and enhance resource efficiency. Furthermore, AI-powered design tools help architects and engineers create eco-friendly structures by analyzing environmental data and recommending sustainable materials and designs. AI's contribution to decision-making cannot be overstated. Advanced data analytics and AI-driven algorithms process vast amounts of information from construction sites, supply chains, and project databases to provide actionable insights. This aids project managers in making informed decisions, optimizing resource allocation, and ensuring project success.

Keywords: Artificial Intelligence, Construction Industry, Sustainability, Machine Learning, Computer Vision, Natural Language Processing, Predictive Analytics, Risk Mitigation, Smart Sensors, Wearable Devices

Introduction:

A BRIEF STUDY ON INTELLIGENT TRANSPORTATION SYSTEMS

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Abstract:

Congestion, air pollution, and accidents increase as traffic density increases around the world. In light of this, the Intelligent Transport System (ITS) has been developed as a remedy for numerous transportation-related problems. ITS is defined as a collection of cutting-edge applications that use intelligent information and communication technology to offer services for managing traffic and transportation. Data collecting, communication, data mining, machine learning, artificial intelligence, and database management are just a few of the technologies that ITS has merged. ITS has created a number of applications by fusing these information technologies, including traffic control, fault detection systems, in-vehicle information and navigation systems, and driver aid systems. Findings: From a variety of well-known digital libraries, we took into account the most pertinent published work from 2008 onwards in relation to our purpose. This work has been condensed into ITS-related problems and methods for resolving them. Application/Improvements: It has been discovered that ITS have become more effective to solve transport-related challenges in smart cities by merging various new technologies such as agent-based computing, cloud computing, VANETS, etc.

Keywords: Intelligent transport system, traffic, Applications, System, Vehicle, Safety, Accidents

Introduction:

A transportation system known as an Intelligent Transport System (ITS) uses cutting-edge technologies like the Global Positioning System (GPS), Global Navigation Satellite System (GNSS), and Cooperative Intelligent Transport System (C-ITS) to ensure that a vehicle or vehicles operate smoothly during their travel time and provide safety and comfort to a single vehicle or a network of vehicles. Internet, sensors, and satellites have been playing an increasingly significant role in the transportation system. Intelligent Transport System can be applied to every mode of transportation, including roads, railways, water, and air. The services that are provided by Intelligent Transport System for both passengers and cargos are of the utmost importance. The use of GPS, GNSS, CCTV cameras, and variable message signs on the side of the road can help safeguard the transportation system from threats, lessen traffic jams, improve travel times, and significantly lower the accident rate. For many years, traffic engineering knowledge has been made available to assist drivers and passengers in making informed choices. Recent years have seen an improvement in transportation thanks to the development of ITS and ATMS, which use internet technology to manage traffic more effectively. In a similar vein, Intelligent Vehicle Highway Systems (IVHS), systems that "procure, resolve, transmit, and portray information to assist transportation passengers in moving from a starting place to their desired predetermined end," can now be used for on-the-go assistance in addition to the gathering of traffic data, are now being used. In time, technology will begin to provide information about parking availability and location in order to recognize the significance of post-trip information transmission. Internet websites, road monitoring, vehicle tracking,

ASSESSMENT OF DIFFERENT TYPES OF FOUNDATIONS AND THEIR MODES OF CONSTRUCTION

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Abstract:

The choice of foundation type is a critical decision in the construction of any structure, as it directly influences the stability, durability, and safety of the building. This study aims to provide a comprehensive assessment of various foundation types and their corresponding modes of construction, considering the diverse geological, structural, and environmental factors that affect foundation selection. This study first examines the fundamental principles of foundations and their role in transferring loads from structures to the underlying soil or rock. It then delves into an extensive review of different foundation types, encompassing shallow foundations such as spread footings and mat foundations, and deep foundations including piles and caissons. The assessment considers the advantages, disadvantages, and suitability of each type in various contexts. Furthermore, the study evaluates the modes of construction associated with these foundation types, encompassing traditional methods and modern techniques, emphasizing sustainability and cost-effectiveness. It explores the use of materials like concrete, steel, and innovative foundation systems like helical piles and geosynthetic reinforcements. Factors such as construction time, labor requirements, and site-specific constraints are also considered. Geological and geotechnical considerations play a pivotal role in foundation design and construction. The study discusses the importance of site investigation, soil testing, and engineering analysis in ensuring the integrity of foundations. It highlights the adaptation of foundations to different soil conditions, including expansive soils, liquefiable soils, and sloping terrains. The article concludes by emphasizing the importance of a systematic decision-making process when selecting the most appropriate foundation type and construction method. It provides insights into the trade-offs between cost, performance, and environmental impact, with the ultimate goal of ensuring the long-term stability and safety of structures.

Keywords: Foundations, Modes of construction, Shallow foundations, Deep foundations, Spread footings, Mat foundations, Piles, Caissons, Construction methods, Site investigation, Soil testing, Geotechnical analysis

Introduction:

The foundation of any structure serves as the literal and metaphorical bedrock upon which the success and longevity of the building stand. In the realm of construction, the choice of foundation type and the mode of its construction are decisions of paramount importance, wielding the power to dictate the structural integrity, durability, and safety of the edifice. The significance of these decisions is magnified when one considers the vast array of geological, structural, and environmental factors that must be weighed in the process [1]. This study embarks on a comprehensive exploration of the multifaceted world of foundations, seeking to understand the diverse foundation types available and their corresponding modes of construction, all in the context of the intricacies presented by the site and its unique characteristics. Foundations play a pivotal role in the construction process by serving as the

CHALLENGES OF E-COMMERCE- A REVIEW

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Abstract:

In recent years, e-commerce has completely changed the way businesses function by giving them an internet platform to market their goods and services. Even though e-commerce has numerous benefits, there are a number of issues that need to be resolved in order for online businesses to succeed. This essay examines the difficulties and future potential of online shopping. The study looks at the difficulties that e-commerce company's encounter, such as logistical problems, competition, and security worries.

Keywords: E-commerce, Types, Challenges, Benefits, Consumer

Introduction

Now-a-days e-commerce is growing popular in an emerging economy. E-commerce began in 1995. It requires the digital goods for carrying out their transactions. Digital goods are goods that can be delivered over a digital network [1]. E-commerce is rapidly transforming the way in which enterprises are interacting among each other as well as with consumers and Governments. As a result of changes in the landscape of ICTs, e-commerce is now growing rapidly in several emerging markets and developing economies. The technologies designed to improve commercial transactions using the Internet have evolved as quickly. However, we have not yet achieved an ideal world of painless and secure transactions utilizing the Internet, as unresolved privacy issues of the purchaser have impeded the further development of the technologies. E-commerce has been hailed by many as an opportunity for developing countries to gain a stronger foothold in the multilateral trading system. E-commerce has the ability to play an instrumental role in helping developing economies benefit more from trade [2]. The growing use of the Internet, tablet devices, and smart phones coupled with larger consumer confidence will see that ecommerce will continue to evolve and expand. With social media growing exponentially in recent years, the conversation between businesses and consumers has become more engaging, making it easier for transactional exchanges to happen online. Internet retailers continue to strive to create better content and a realistic shopping experience with technologies like augmented reality. With mobile commerce gaining speed, more users are purchasing from the palm of their hand [3]. E-commerce could deliver a significant benefit to businesses in developing countries by increasing their control over its place in the supply chain, thus improving its market efficiency [4].

What is E-Commerce?

The buying and selling of products [6] and services by businesses and consumers through an electronic medium, without using any paper documents is called E-commerce. E-commerce is widely considered the buying and selling of products over the internet, but any transaction that is completed solely through

CYBERSECURITY AND RISK MANAGEMENT IN CIVIL ENGINEERING

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Abstract:

In an increasingly digital and interconnected world, the field of civil engineering is not immune to the growing threats posed by cyberattacks. As critical infrastructure systems become more reliant on digital technologies, the potential for cyber threats to disrupt and compromise civil engineering projects has never been greater. This abstract explores the vital intersection of cybersecurity and risk management in the context of civil engineering. Civil engineering projects, which encompass the design, construction, and maintenance of infrastructure such as bridges, buildings, and transportation systems, are essential for modern society. However, the integration of digital technologies into these projects has introduced new vulnerabilities and risks. This paper examines the unique cybersecurity challenges faced by civil engineers, including the potential for unauthorized access, data breaches, and system disruptions that can have far-reaching consequences. Effective risk management is crucial to mitigate these cybersecurity threats. This abstract outlines the risk assessment process, emphasizing the identification and analysis of potential vulnerabilities, as well as the development of strategies to protect critical systems and data. It also explores how risk management extends beyond technology, encompassing personnel, processes, and third-party relationships. Furthermore, this abstract highlights the need for collaboration between civil engineers, cybersecurity experts, and policymakers to develop comprehensive cybersecurity guidelines and regulations specific to the civil engineering sector. It underscores the importance of proactive measures, including cybersecurity training and awareness programs, incident response plans, and continuous monitoring of infrastructure systems. By recognizing the evolving landscape of cyber threats and the importance of risk management, civil engineering can continue to thrive and ensure the resilience of vital infrastructure projects in the face of digital vulnerabilities.

Keywords: Cybersecurity, Risk management, Civil engineering, Infrastructure, Cyber threats, Vulnerabilities, Critical systems, Risk assessment, Data breaches, Unauthorized access, Resilience

Introduction

In the era of rapid technological advancement, the integration of digital technologies into civil engineering has brought about unprecedented opportunities and challenges. Civil engineering, a field fundamental to the development and sustenance of modern societies, encompasses the design, construction, and maintenance of critical infrastructure, such as bridges, roads, buildings, and utilities [1]. These infrastructures are the lifeblood of economies and societies, making them lucrative targets for cyber threats. The intersection of cybersecurity and risk management in civil engineering has become an imperative area of study and practice, as it holds the key to safeguarding our critical infrastructure against an evolving landscape of cyber vulnerabilities. The digital transformation of civil engineering projects has not only enhanced efficiency but also introduced new vectors for risk and potential vulnerabilities. These projects rely heavily on interconnected systems, data-driven processes, and automation, which can be exploited by malicious actors. Unauthorized access, data breaches, and system

GENERAL INFORMATION ABOUT INDIAN RAILWAYS

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Abstract:

In the review study we have discussed about Indian railways. India needs effective transportation because it is one of the larger nations in terms of its geographic area and needs to travel significant distances. The railroad is responsible for meeting the needs of both long-and short-distance travelers. In addition to transporting people, this railway system has grown to become the second-largest employment in the world. Because they offer affordable and enjoyable experiences that are preferred by almost all passengers who frequently travel by rail, India's railways are the country's lifeline. It depends on this form of travel and transportation because to the enormous population. However, a thorough investigation of the variables influencing rail passengers' pleasure is necessary. The success of Indian Railways depends on the satisfaction of its customers with the services they receive. It has been said that Indian Railways fall short of the requirements of the highest level. Although trains are the preferred mode of transportation in India, there is a healthy demand for rail services. Only when the passengers were pleased with the services received by the Indian Railways could it be said that it was successful. However it also includes Methodology and analyzing etc.

Keywords: Railway, Indian, Train, Government, Passenger, IR, Speed, Track, Freight, Service

Introduction:

The Government of India owns and runs Indian Railways (IR), the third-largest transportation and logistics system in the world. The largest government project is staffed by more than 1.4 million people and has a vast network of more than 7,300 stations spread across 70,000 km of rail. Every day, it runs roughly 14,000 passenger trains and 10,000 freight trains. Even though more than 60 years of long-awaited independence have passed, it is quite concerning that only 60% of the network is electrified. Due to the organization's matrix structure, extensive network, and complicated mix of functions, IR is controlled using a multi-layer system with zones and divisions within zones. With Kolkata Metro excluded, there are currently 16 zones and 73 divisions. Passenger and freight services make up the bulk of "the lifeline of transportation of India's" core activity. Because IR is also associated with shipping, and shipping is directly tied to trade volume, its significance is further increased. It transported 1.22 billion tons of freight and 8.35 billion people throughout the course of the 2018–2019 fiscal years. With 1.96 trillion Indian Rupees in total revenue and 1.91 trillion in total expenses, IR had a pitiful net profit of 60.14 billion and an operating ratio (OR) of 96.2%. More over 60% of IR's total earnings during that time period came from the freight division, which was followed by the passenger, miscellaneous, and coaching segments.

The Comptroller and Auditor General of India has reported that there are three possible sources of resources for IR, namely: **1.** in-house sources **2.** Additional financial resources **3.**Total monetary assistance. Revenue from passenger, goods, miscellaneous, and other coaching profits are among the internal resources. Borrowing through the Indian Railway Finance Corporation (IRFC), institutional financing through the Life Insurance Corporation of India, and investment through public-private

MULTIPLE EFFECTS OF URBANIZATION ON BIODIVERSITY

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Abstract:

Urban land conversions are anticipated to become a more significant cause of habitat and biodiversity loss as the world's urban population is predicted to increase by 2.5 billion people over the course of the next 30 years. It is imperative to gain a better understanding of the potential locations and mechanisms of these biodiversity losses in order to mitigate these impacts. Our findings imply that methods for reducing urban land's effects could improve international agreements protecting biodiversity. In this paper, we will explain the various factors affecting the biodiversity and various conservation and restoration strategies.

Keywords: Biodiversity, Urbanization, Ecosystem, Natural habitat, Human

Introduction

The world's cities are growing, and urbanization is thought to be a threat to biodiversity. The expansions of cities and human settlements have a significant impact on natural ecosystems. Natural habitats are lost, deteriorated, and fragmented as a result of urban expansion. Impermeable surfaces also rise, and non-native species are introduced, along with other environmental effects as the heat-island effect and pollution of the air, water, and noise. In the end, urbanization creates new habitats with unique biotic and abiotic features that are difficult for many species, including insects, to survive in. Cities are home only to those species that can adapt or manage with this new and difficult set of urban surroundings. The expansions of cities and human settlements have a significant impact on natural ecosystems. Natural habitats are lost, deteriorated, and fragmented as a result of urban expansion. Impermeable surfaces also rise, and non-native species are introduced, along with other environmental effects as the heat-island effect and pollution of the air, water, and noise. In the end, urbanization creates new habitats with unique biotic and abiotic features that are difficult for many species, including insects, to survive in. Cities are home only to those species that can adapt or manage with this new and difficult set of urban surroundings. [1] Both directly and indirectly, urbanization affects biodiversity and environmental services. The main physical changes brought about by the growth of urban areas are soil modification, changed disturbance regimes, habitat loss and degradation, and other direct consequences. Changes in the availability of water and nutrients, an increase in abiotic stressors such air pollution, an increase in competition from non-native species, and adjustments to herbivory and predation rates are examples of indirect consequences.[2] Preserving urban biodiversity requires an understanding of how plant diversity reacts to urbanization. Preserving urban biodiversity requires an understanding of how plant diversity reacts to urbanization. Compared to herbs and shrubs, trees reacted to the effects of urbanization more favorably. [3]



SURVEY ON VIDEO COMPRESSION TECHNIQUES

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Abstract:

This study provides a novel comparison of video compression methods. Owing to the quick advancements in computers and internet technology, video streaming apps are becoming more and more popular. As a result, considerable storage space and network bandwidth are now needed for the transmission and storage of uncompressed raw video. Videos can be compressed with high compression ratios using specialized algorithms that take these qualities into consideration. The representative attempts on video compression are demonstrated in this paper.

Keywords: Video compression, Discrete Cosine Transform, DWT, Hybrid, Frame

1. INTRODUCTION:

Digital video [25] is a representation of moving visual images in the form of encoded digital data. Digital video comprises a series of digital images displayed in rapid succession. Video compression is the process of encoding a video file in such a way that it consumes less space than the original file and is easier to transmit over the network/internet. It is a type of compression technique that reduces the size of video file formats by eliminating redundant and non-functional data from the original video file.

2. VIDEO COMPRESSION:

There are two types of video compression:

A) Lossy Compression:

Lossy compression is the class of data encoding methods that uses inexact approximations and partial data discarding to represent the content. This technique is used to reduce size for storage, handling and transmitting content.

THE MEASUREMENT AND ANALYSIS OF DIFFERENT PARAMETERS RELATED TO HEAT TRANSFER

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Abstract:

To comprehend solidification processes, a thorough literature research on heat transfer analysis has been used in this work. Nevertheless, it is frequently challenging to exactly determine the values of all input parameters, including thermal conductivity and heat transfer coefficient. This paper develops a data-assimilation-based parameter estimate approach for heat transfer analysis. The applicability of the particle filter, a data assimilation approach, was thoroughly examined in the authors' prior work, which used it to estimate the thermal conductivity and heat transfer coefficient in mold casting heat transfer analysis. Based on trials, the application of a novel data assimilation approach to the calculation of thermal conductivity and the heat transfer coefficient is examined in this paper. It is demonstrated that using three cooling curves for thermal conductivity and two cooling curves for the constant or time-dependent heat transfer coefficient, respectively, one can properly estimate both parameters on their own. Moreover, it is possible to measure the time-dependent heat transfer coefficient and thermal conductivity concurrently and accurately.

Key words: Heat transfer, Thermal conductance, Experimental, Transfer analysis, parameters

Introduction:

To create more dependable and long-lasting components, the heat transfer rate of contact surfaces has to be identified and managed. The precision of the input parameters determines the analysis of heat transport in its entirety. However, when new alloys and newly developed processes are taken into consideration, it is not always simple to acquire the values of input parameters with high precision, such as thermal conductivity k and heat transfer coefficient h . The alloy undergoes liquid phase fluid movement during the solidification process, and the solute redistribution at the solid/liquid interface also modifies the concentration distribution. As a result, the heat transfer analysis should be explained along with the fluid dynamics and time change of the concentration field. The heat transfer study is frequently performed without explicitly specifying fluid dynamics and the temporal change of concentration field, though, because such an analysis typically demands large computing costs. The heat transfer analysis's usage of k in this situation relates to an apparent value that is particular to each casting problem and implicitly takes the effects of fluid flow and concentration change into account. However, because the apparent value varies on a number of variables, including the alloy system and casting circumstances, it is challenging to evaluate it simply and properly. Developing a straightforward technique to ascertain the apparent value of k is crucial. Furthermore, it is crucial to note that even the real value of k is not always known, particularly in multi-component alloys. [1]

The transport of heat across contacts, particularly between rough surfaces, has been the subject of countless experimental and theoretical investigations. In [3], one of the most well-known contact heat transfer models was presented. For isotropic surfaces under plastic deformation, this theory—known as CMY—is used. Based on the CMY model, other models were created, such as Mikic and Yovanovich's

WATER WITHDRAWAL AND THEIR USES

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Abstract:

The global water cycle has been significantly impacted by humans, both in terms of water flows and storage. Using the global water resources and use model Water GAP, we have conducted the first world scale examination of the effect of water withdrawals on fluctuations in water storage. This requires the estimate of groundwater withdrawal percentages based on five different water use sectors. Our analysis indicates that groundwater is the source of 35% of the water taken globally ($4300 \text{ km}^3/\text{year}$ between 1998 and 2002). While we assume that only surface water is utilized for livestock and thermal power plant cooling, groundwater contributes 42%, 36%, and 27% of the water used for irrigation, homes, and manufacturing, respectively. From 1998 to 2002, $1400 \text{ km}^3/\text{year}$ of water was consumed. It is the total of the net withdrawal of groundwater of $250 \text{ km}^3/\text{year}$ (after accounting for evapo-transpiration and groundwater and surface water withdrawal return flows) and the net withdrawal of surface water of $1150 \text{ km}^3/\text{year}$. For the first time at the global level, computed net abstractions show where and when human water withdrawals reduce or increase groundwater or surface water storage. In areas with considerable surface water irrigation, like Southern China, groundwater is refilled by irrigation, therefore there are no net abstractions from the groundwater. The converse is true for regions where groundwater irrigation predominates, such as the High Plains aquifer in the center of the USA, where net surface water abstraction is negative because groundwater recharges the surface water compartments through return flow. Human water consumption generally results in an increase in the amplitude of seasonal total water storage changes in highly irrigated areas; but, in other places, it is lowered. Modeled groundwater and total water storage variations for the High Plains aquifer and the entire Mississippi basin were compared to estimates of groundwater storage variations and estimates of total water storage changes from the GRACE satellite mission. It is unclear whether or not Water GAP underestimates actual variations because it is difficult to predict area-averaged seasonal groundwater storage variations from point observations of groundwater levels. We come to the conclusion that, in the High Plains aquifer, where the effect of human water usage on water storage is clearly observable based on Water GAP calculations and groundwater measurements, Water GAP may be overestimating water withdrawals. The health of the ecosystem, societal well-being, and national economic stability are all impacted by inefficient water use. In fact, one of the foundational principles of sustainable development goals is water use efficiency (WUE).

Keywords: Water, Groundwater, Withdrawal, Water GAP, Irrigation, Agriculture

INTRODUCTION:

Large volumes of water are regularly taken out of inland surface water bodies (such as rivers, lakes, marshes, and reservoirs) and aquifers for a variety of applications, including agriculture, home consumption, production of power, and industrial use. Worldwide water withdrawal has grown at a rate that is approximately twice as rapid as global population growth. Approximately 69% of all water