National Conference

on

RECENT TRENDS IN ENGINEERING SCIENCE
AND
INNOVATIVE TECHNOLOGIES
(NCRTEIT-2021)

05 February 2021

Conference Proceedings

Organised by

Sri Bharathi Engineering College for Women

(Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai-25)

Kaikkurichi (PO),

Pudukkottai - 622 303

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ABOUT US

SRI BHARATHI ENGINEERING COLLEGE FOR WOMEN (SBECW) the first college started one and only for women's higher education in Pudukkottai District, is named after the famous poet and freedom fighter, Bharathiyar, as the fought for women's freedom. This college started by "Sri Bharathi Educational Trust", in the year 2009 in a rural area of Pudukkottai District which is dedicated for the entire development of education, training and to face the society with positive deportment for women and to serve for the upliftment for the society.

SBECW is located about 6KM away from Pudukkottai. The Mission and Vision of this Institution is to inspire and educate young minds to grow with the principles of Truth, Obedient, Honor, Purity, Integrity and Obedience for their enlightment.

The Destiny of our Nation lies in the hands of children. They should be molded and shaped by proper education. We take care in educating the children to know their responsibilities towards their elders, poor & down trodden people. Apart from education our motto is to train the children to become good citizens of India in all aspects.

Our Institution offers five under graduate programmes in various disciplines,

- ❖ B.E.   - CIVIL ENGINEERING
- ❖ B.E.   - COMPUTER SCIENCE & ENGINEERING
- ❖ B.E.   - ELECTRICAL & ELECTRONICS ENGINEERING
- ❖ B.E.   - ELECTRONICS & COMMUNICATION ENGINEERING
- ❖ B.Tech. - INFORMATION TECHNOLOGY

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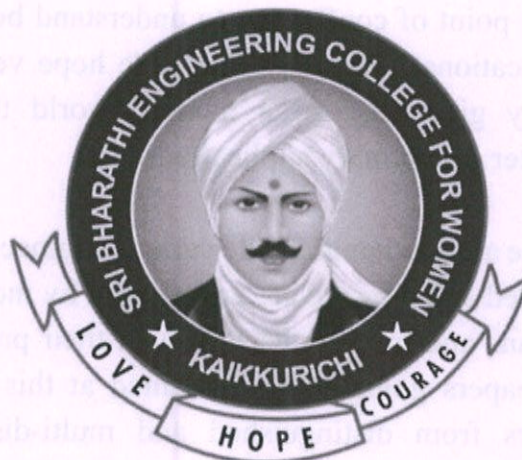
Sri Bharathi Engineering College for Women

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KAIKKURUCHI, PUDUKOTTAI – 622 303.

NATIONAL CONFERENCE ON RECENT TRENDS IN ENGINEERING SCIENCE AND INNOVATIVE TECHNOLOGIES [NCRTEIT–2021]

05th FEBRUARY'2021

CONFERENCE PROCEEDINGS

ACADEMIC YEAR 2020 – 2021

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PREFACE

Sri Bharathi Engineering College for Women, Kaikkurichi, Pudukkotai has organized a "National Conference on Recent Trends in Engineering Science and Innovative Technologies [NCRTEIT–2021]" and conducted by the Departments of Civil, Computer Science & Information Technology, Electrical and Electronics Engineering, Electronics and Communication Engineering. We feel swollen with pride and fortunate enough to systematize NCRTEIT–2021 on 05th February 2021.

The field of Engineering while looking back to the origins of the history, the contributions where astonishing as well as they stand wonders to exhibit for our age. Due to the wide expansion of the knowledge as well as the population growth, the field of engineering has to spread over a wide spectrum. This has resulted in multi various aspects in the field of engineering and requires specialization in each of the field. Now living through the current age, specialization in a particular field alone will not be helpful. In such a condition integration of multi various activities of engineering will alone fulfill the requirements of the high-tech modern world and in the days to come. As a fore thought and also to bring out the talents of the students of the various fields of engineering into one point of confluence to understand better and this is a joint venture for this Educational Institution also. We hope very much that such an effort will definitely give raise to a modern world through fulfillment of technologies with inter disciplinary applications.

Our conference aims to integrate the various engineering disciplines and we feel our aim is fulfilled and now we are encouraged by more number of research scholars, academicians and industrialists through their proposals in the form of their full research papers going to be presented at this conference. We have received 107 papers from distinguished and multi-disciplinary engineering domains such as Civil, Electrical, Electronics and Information Technology and Computer Science. Our Technical Core committee short listed those papers into 99 in numbers through an optimum quality policy in selection from those 107 papers.

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All those selected papers are to uplift the objectives of the conference and to interlink the multi-disciplinary engineering domains with a fore thought to achieve a new generation of engineers with an inter-disciplinary understanding.

My sincere thanks to the respected Chairman cum Managing Director, **Thiru. G.Dhanasekaran** Sri Bharathi Educational Institutions who is the main root for the cause of this National Conference and our thanks to the Secretary, **Mr. L. Dawood Gani** and our thanks to the Correspondent **Er. N. Kanagarajan** and also all the Trust members who have shouldered the organizational role.

I feel my immense pleasure to thank our Patron **Dr. S. Thilagavathi, M.E., Ph.D.,** and Principal for giving me this great opportunity for this National Conference NCRTEIT–2021.

My sincere thanks to Chief Advisor of this conference **Thiru. A. Krishnamoorthy,** Administrative Officer and Institutional Publisher, SBECW, Pudukkottai.

I feel my jubilant thanks to all committees especially for Advisory committee, Technical committee and Editorial and Printing committee. I am gratified to the members of NCRTEIT–2021, judges of various session, participants of multi-disciplinary.

I also feel my triumphant delight to all delegates, faculties and non-teaching faculty members of SBECW, supportive staff of NCRTEIT–2021 and finally I am very grateful to the scholars of SBECW.

February 05, 2021,
Kaikkurichi.

Convener: NCRTEIT–2021,
Mrs. R. Padmarani, Asst. Professor,
Department of Civil Engineering,
Sri Bharathi Engineering College for Women,
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ABOUT THE CONFERENCE

This National Conference on Recent Trends in Engineering Science and Innovative Technologies (NCRTEIT–2021) plays an imperative role in meeting demands of the society and taking the illumination of acquaintance to the depth of obscurity, uplifting the embarrassed by providing the education to the society. This conference will enable under graduate, post graduate, Research scholar, Faculties and Industrial Participants from the various streams of engineering to interact the people and making then bend with the society and awareness about multi-disciplinary fields.

"A unity in diversity" is the normal slogan that is known to most of the Indian Citizen. The Constitution, Government, Law and the basic human rights are all unified irrespective of its diversified regional, religious, linguistic and cultural habitual of the Indian people, does not stand in the way of the unity of Indians. If the country is so, why not we, the engineers who are the pillars of the monumental structure shall unite and hold the nation's pride. The diversified fields are only various parts of the body. The function of a human being is only on united action of the various parts of the body. For anything and everything we need a building or structure with all amenities. For that we require invariably the services of engineers of various disciplines all that we know. As a matter of fact, we are supposed to find out a solution oby finding a way for inter connecting the activities of various disciplines. As the first step, as the Armstrong set his foot on the moon, a proposal for conducting a national conference of this nature is formulated.

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Thiru. G. Dhanasekaran, M.A., M.Com., M.Phil.,
Chairman and Managing Trustee,
Sri Bharathi Group of Institutions,
Kaikkurichi, Pudukkottai – 622 303.

MESSAGE

It gives me immense pleasure to know that the Departments of CIVIL, ECE, EEE, CSE, and IT of Sri Bharathi Engineering College for Women, Kaikkurichi, Pudukkottai is organizing a "National Conference on Recent Trends in Engineering Science and Innovative Technologies (NCRTEIT–2021)" on 05th February 2021.

This conference will sharpen the intellects of the Faculty members and students of this 14 years old Institution and will enlighten the participants with latest trends in Multi-Disciplinary Engineering Domain.

My appreciation and congratulations are due to the faculty members and students for their excellent contribution to the academic growth of this Technical Institution, started exclusively for the benefit of women students of rural areas.

I extend my warm greeting to the Principal, Staff and the participants to this occasion.

"When aims are high and efforts are superfluous,
Production and outcome will be a great success"

I wish the conference a great success.

Thiru. G. Dharasekaran,
Chairman & Managing Trustee

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Mr. L. Dawood Gani,
Secretary,
Sri Bharathi Group of Institutions,
Kaikkurichi, Pudukkottai – 622 303.

MESSAGE

I am happy to note that a "National Conference on Recent Trends in Engineering Science and Innovative Technologies (NCRTEIT–2021)" is being organized by various Departments of Sri Bharathi Engineering College for Women, Kaikkurichi, Pudukkottai on 05th February 2021. It is interesting to know that a Souvenir is also being released on this occasion.

This conference will provide an excellent platform for the Faculty members & Research Scholars for exchanging their ideas and experiences for the benefit of the students.

I congratulates the Principal & Faculty members of the Departments of CIVIL, ECE, EEE, CSE & IT for organizing the conference.

"Creativity is a must to shine in this competitive world
Conference is the best way to reach that Paradise"

I wish the conference a great success.

Mr. L. Dawood Gani,
Secretary

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Er. N. Kanagarajan,
Correspondent,
Sri Bharathi Group of Institutions,
Kaikkurichi, Pudukkottai – 622 303.

MESSAGE

I am very pleasure to inform you that the "National Conference on Recent Trends in Engineering Science and Innovative Technologies (NCRTEIT–2021)" is being organized and conducted by the various Departments CIVIL, ECE, EEE, CSE & IT of Sri Bharathi Engineering College for Women, Kaikkurichi, Pudukkottai on 05th February 2021.

This conference will provide an excellent platform for the Faculty members & Research Scholars from various parts of the state and country for exchanging their ideas and experiences for the benefit of the students.

I congratulates the Principal & Faculty members of the Departments of CIVIL, ECE, EEE, CSE for organizing this national conference NCRTEIT–2021.

I wish this conference for a great success.

Er. N. Kanagarajan,
Correspondent

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Dr. S. Thilagavathi, M.E., Ph.D.,
Principal,
Sri Bharathi Engineering College for Women

MESSAGE

It is a great pleasure for me as a dream has been translated into reality in organizing a "National Conference on Recent Trends in Engineering Science and Innovative Technologies (NCRTEIT–2021)" in our Fifteen years old college on the most auspicious day of 05th February 2021. I strongly believe that this conference provides a platform for the participants of various disciplines to disseminate, share and exchange their ideas. I promise that Sri Bharathi Engineering College for Women will serve as a grooming ground for new generation of women leaders to exhibit their talents on research through this national conference.

I take this opportunity to sincerely that the management of our college for encourage financially supporting and extending tall the cooperation in organizing this Fifth National Conference on Cutting Edge Technologies in Science and Engineering in our campus. I would like to place on record my whole hearted appreciating for all the members of the various committees for their untiring efforts put in to make this conference a splendid one. It is hoped that the participants will have a pleasant stay in the campus during the conference period and carry the message of the conference for the benefit of large section of students spread over different institutions. The college will be conducting many more programs in the years to come with continued support from the management and with encouragement received from all the participants. I also thank the principals of other colleges for motivating their faculty and students to submit papers.

I wish the conference a grand success.

Dr. S. Thilagavathi
Principal

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1. Title: Performance of Lime-Slag Stabilization for Soft Soils in Foundation Engineering

[1]Mrs.Dennis flora.P, [2]Ms.Vidhya.S, [3]Ms.Chandrika.C

[1, 2]Assistant professor, [3]U.G.student, Department of Civil Engineering,

Sri Bharathi Engineering College for Women

Abstract: The stabilization of soft soils is of utmost importance in foundation engineering to ensure the stability and load-bearing capacity of structures. Lime-slag stabilization has emerged as a promising technique to improve the engineering properties of soft soils. This study aims to evaluate the performance of lime-slag stabilization for soft soils in foundation engineering through comprehensive laboratory testing and analysis.Soft soil samples were collected from various sites and treated with different proportions of lime and slag. A series of laboratory tests were conducted to assess the changes in soil properties, including compressive strength, shear strength, permeability, and settlement characteristics. The effects of curing time and various environmental conditions were also investigated to understand the long-term performance of the treated soils.

Keywords: Lime-slag stabilization, soft soils, foundation engineering, compressive strength, shear strength, settlement, permeability, curing time.

2. Title: Incorporation of Recycled Plastic Waste as Partial Replacement for Fine Aggregate in Concrete

[1]Dr.Thilagavathi.S, [2]Ms.Gayathri.G, [3]Ms.Karthika.K

[1]Principal, [2]Assistant professor, [3, 4]U.G.student, Department of Civil Engineering,

Sri Bharathi Engineering College for Women

Abstract: The ever-increasing generation of plastic waste has become a major environmental concern worldwide. In recent years, there has been a growing interest in finding sustainable solutions to manage plastic waste and its potential incorporation into construction materials. This study explores the feasibility and effects of incorporating recycled plastic waste as a partial replacement for fine aggregate in concrete.Different concrete mixtures were prepared by replacing a portion of the fine aggregate with varying percentages of recycled plastic waste. A comprehensive series of tests was conducted to evaluate the fresh and hardened properties of the concrete, including workability, compressive strength, tensile strength, durability, and microstructure analysis. The impact of plastic waste on the concrete's behavior, as well as its influence on the environment, was assessed to gain a comprehensive understanding of its applicability as a construction material.

Keywords: Recycled plastic waste, fine aggregate, concrete, workability, compressive strength, tensile strength, durability, microstructure, sustainability.

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3. Title: Environmental Monitoring and Modeling for Pollution Control

[1]Mr. H. Hadilarshad, [2]Ms. A. Kayalvizhi
[1, 2]Assistant professor, Department of Civil Engineering,
Chendhuran College of Engineering and Technology

Abstract: Environmental monitoring and modeling play a crucial role in pollution control efforts by providing valuable insights into the sources, distribution, and impacts of pollutants. It discusses the importance of establishing comprehensive monitoring programs to collect data on various pollutants, including air pollutants, water contaminants, and soil pollutants. It provides insights into the importance of comprehensive monitoring programs, modeling techniques, and data analysis for identifying pollution sources, evaluating control strategies, and ultimately achieving sustainable environmental management.

Keywords: Environmental monitoring, modeling, pollution control, comprehensive monitoring programs, pollutant dispersion patterns, pollution hotspots, mathematical models, atmospheric dispersion models, water quality models, remote sensing, geographic information systems (GIS), data integration, data analysis, machine learning, data fusion, sustainable environmental management.

4. Title: Experimental Investigation on Concrete by Partial Replacement of Dolomite Powder as Cement

[1]Ms.Gayathri.G, [2]Ms.Muthumeena.P, [3]Ms.Pothumpen.A, [4]Ms.Rajeswari.J
[1]Assistant professor, [2, 3, 4]U.G.student, Department of Civil Engineering,
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Abstract: The experimental investigation carried out to evaluate the effects of concrete by replacing the dolomite powder in cement. Concrete is used more than any other material in the world so the use of concrete is unavoidable at the same time scarcity of aggregate is also increased now a days. The industrial waste has been encouraged in construction industries because it contributes to reduce the usage of natural resources for many years by product such as dolomite powder were considered as waste materials. They have been successfully used in the construction industries for the partial and full substitution in concrete. In this study concrete of M30 grade were considered for a w/c ratio of 0.44 respectively for the replacement of dolomite powder 0%,5%,10% and 15% by dolomite were cast and tested for compressive strength after curing period of 7 days, 14 days & 28 days.

Keywords: Dolomite powder, concrete, M30 grade cement, industrial waste.

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5. Title: Effect of Ground Granulated Blast Furnace Slag as Partial Replacement for Cement in Concrete

[1]Mrs.Dennis flora.P, [2]Ms.Kanaga.A, [3]Ms. Priyadharshini.S
[1,2]Assistant professor, [3]U.G.student, Department of Civil Engineering,
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Abstract: The utilization of industrial by-products as supplementary cementitious materials in concrete has gained considerable attention in recent years due to its potential benefits on both environmental and engineering aspects. Ground granulated blast furnace slag (GGBFS) is one such by-product that shows promise as a partial replacement for cement in concrete. This study aims to investigate the effect of GGBFS as a partial replacement for cement on the properties and performance of concrete. Various concrete mixtures were prepared by substituting cement with different proportions of GGBFS. A comprehensive set of tests was conducted to evaluate the fresh and hardened properties of the concrete, including workability, compressive strength, tensile strength, durability, and microstructure analysis.

Keywords: Ground granulated blast furnace slag (GGBFS), cement replacement, concrete, workability, compressive strength, tensile strength, durability, microstructure, sustainability.

6. Title: Innovative Solutions for Waste Management and Infrastructure on Plastic Roads.

[1]Mrs.Priya.R, [2]Mrs.Padmarani.R, [3]Ms. Rajeswari.J
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Abstract: Plastic roads have emerged as an innovative and sustainable solution for addressing both waste management challenges and infrastructure needs. This study explores the utilization of plastic waste in road construction to create environmentally friendly and durable pavements. Various asphalt and bituminous concrete mixtures were designed with different proportions of plastic waste, and their mechanical and environmental properties were extensively investigated. The environmental benefits of plastic roads were evident as well. The utilization of plastic waste diverted significant amounts of single-use plastics from landfills and oceans, contributing to waste management and plastic pollution reduction. Furthermore, plastic-modified pavements showed potential for lower energy consumption during construction, reducing the carbon footprint of road infrastructure projects.

Keywords: Plastic roads, waste management, infrastructure, sustainable construction, plastic waste, mechanical properties, environmental impact, road pavements, bituminous concrete, waste recycling.

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7. Title: Enhancing Compressive Strength of Concrete Using Chemical Admixtures and Nano-Particles

[1]Mrs.Chithirai Selvi.N, [2]Dr.Thilagavathi.S, [3]Ms. Sivapriya.S
[1]Assistant professor, [2]Principal, [3]U.G.student, Department of Civil Engineering,
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Abstract: The compressive strength is a critical characteristic of concrete that directly influences its structural performance and durability. This study investigates the enhancement of concrete compressive strength by incorporating chemical admixtures and nano-particles. Various concrete mixtures were designed with different combinations of superplasticizers, water-reducing agents, and nano-sized additives, and their mechanical properties were extensively examined. The combination of superplasticizers and water-reducing agents reduced the water-cement ratio and increased the density of the concrete, leading to enhanced compressive strength.

Keywords: Compressive strength, concrete, chemical admixtures, nano-particles, superplasticizers, water-reducing agents, nano-silica, nano-alumina, cement hydration, workability, microstructure.

8. Title: The Behavior of Steel Structures under Seismic Loads, Seismic Design Codes, and Innovative Seismic Design Approaches to Enhance Structural Performance and Safety.

[1]Ms. S. Nivetha
[1]Assistant professor, Department of Civil Engineering,
Mahath Amma Institute of Engineering and Technology

Abstract: This abstract focuses on the behavior of steel structures under seismic loads and explores seismic design codes and innovative approaches to enhance their structural performance and safety. It highlights the importance of understanding the dynamic behavior of steel structures during earthquakes and the need for robust design strategies. The abstract discusses seismic design codes that provide guidelines for designing steel structures to withstand seismic forces. It also emphasizes the importance of incorporating innovative seismic design approaches, such as base isolation, energy dissipation devices, and advanced analysis techniques, to enhance the seismic performance and safety of steel structures.

Keywords: behavior, steel structures, seismic loads, seismic design codes, innovative seismic design approaches, structural performance, safety, dynamic behavior, earthquakes, robust design, seismic forces, base isolation, energy dissipation devices, advanced analysis techniques, resilience, structural integrity, seismically active regions.

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9. Title: Paving the Way to Sustainability: Plastic Roads for the Future

[1]Mrs.Padmarani.R, [2]Ms.Vidhya.S, [3]Ms.Maheshwari.V, [4]Ms.Meenachi.K
[1, 2]Assistant professor, [3, 4]U.G.student, Department of Civil Engineering,
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Abstract: The construction industry faces significant challenges in managing plastic waste and its detrimental impact on the environment. In recent years, the concept of using plastic waste in road construction has gained attention as a potential solution to both waste management and sustainable infrastructure development. The environmental analysis indicated a significant reduction in plastic waste in landfills and oceans, presenting a valuable contribution to waste management efforts. The adoption of plastic waste in road construction not only addresses plastic pollution but also promotes resource conservation and eco-friendly practices in the transportation sector.

Keywords: Plastic roads, sustainable infrastructure, plastic waste, road construction, waste management, mechanical performance, environmental impact, bitumen, asphalt, pavement sustainability.

10. Title: Use of Waste Plastics to Improve Geo Technical Properties of Soil

[1]Mrs.Dennis flora.P, [2]Ms.Kasthuri.K, [3]Ms.Priyadharshini.S, [4]Ms.Sivapriya.S, [5]Ms.Lakshmi.A
[1]Assistant professor, [2, 3, 4, 5]U.G.student, Department of Civil Engineering,
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Abstract: Soil stabilization alters the physical properties of soil in order to improve its strength, durability, or other qualities to meet the engineering requirements. It can be achieved by adding suitable admixtures like cement, lime and waste material like fly ash, gypsum etc or by other suitable stabilization method. the cost of adding these additives has tremendously increased in past few years; therefore there is need for the development of other kinds of soil additive such as plastic, bamboo etc and these new techniques of soil stabilization using plastic waste which can be effectively used to solve the challenges of society, thereby reducing the amount of waste plastic material. Use of polythene bags, bottles, and other plastic products is exponentially increasing year by year due to which we are facing various environmental problems. Therefore the correct way disposing off of the plastic waste without causing any ecological hazard has become a real challenge today. A review paper in presented here to focus on soil stabilization methods by using waste plastic products.

Keywords: cement, lime, waste materials, fly ash, gypsum, plastic, bamboo, polythene bags.

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11. Title: The role of government policies and regulations in promoting effective waste management.

[1]Mr. R. Vinoth
[1]Assistant professor, Department of Civil Engineering,
M N S K College of Engineering

Abstract: Government policies and regulations play a crucial role in promoting effective waste management practices. This study aims to explore the role of government policies and regulations in facilitating and enhancing waste management efforts. Through a comprehensive analysis of existing literature and case studies, the study examines the impact of various policy instruments, such as waste management legislation, waste diversion targets, and financial incentives, on waste management practices. The study also highlights the importance of regulatory frameworks in ensuring compliance and accountability in waste management activities. Furthermore, the study explores the role of government in fostering collaboration and partnerships between different stakeholders, including industry, communities, and waste management service providers.

Keywords: government policies, regulations, waste management, waste management legislation, waste diversion targets, financial incentives, regulatory frameworks, compliance, accountability, collaboration, partnerships, sustainable waste management, environmental objectives, public health objectives.

12. Title: Experimental Study on Comparision of Strength Characteristics of Conventional And Composite Brick

[1]Ms.Manju.R, [2]Ms.Chandrika.C, [3]Ms.Dhesika Parthi. D, [4]Ms.Karthika.K, [5]Ms.Monika.K
[1]Assistant professor, [2, 3, 4, 5]U.G.student, Department of Civil Engineering,
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Abstract: This project is an attempt to minimizing the extraction of raw materials with respect to the demand for building materials especially bricks. So this is an attempt to invent the composite brick by using the various waste raw materials like Fly ash, Granite dust, Ironite in five different combinations with least amount of cement as binder. The composite bricks of size (190*90*90) mm are produced by applying pressure such that no need to burn in the kilns in turn environmental pollution can be avoided. After 28days of curing the bricks will be tested for various characteristics like compressive strength and water absorption capacity, so this study will demonstrate the production of composite bricks and their comparison with the conventional clay bricks.

Keywords: Waste reduction, recycling, innovative approaches, urban areas, waste prevention, source separation, composting, circular economy, smart waste collection, community engagement, resource efficiency.

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13. **Title: Enhancing Compressive Strength of Lightweight Concrete through Chemical Admixtures**

[1]Ms.Vidhya.S, [2] Mrs.Padmarani.R, [3]Ms. Dhesikaparthi.D, [4]Ms. Kasthuri.K

[1, 2]Assistant professor, [3, 4]U.G.student, Department of Civil Engineering,

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Abstract: Lightweight concrete offers advantages such as reduced dead load, improved thermal insulation, and enhanced fire resistance. However, its lower compressive strength compared to conventional concrete can limit its applications. This study focuses on enhancing the compressive strength of lightweight concrete through the incorporation of chemical admixtures. Various chemical admixtures, including superplasticizers, air-entraining agents, and viscosity-modifying agents, were investigated for their effects on the compressive strength of lightweight concrete.A comprehensive experimental program was conducted to evaluate the fresh and hardened properties of the lightweight concrete, with particular emphasis on compressive strength. The influence of the chemical admixtures on workability, setting time, and density was also assessed.

Keywords: Lightweight concrete, compressive strength, chemical admixtures, superplasticizers, air-entraining agents.

14. **Title: Fire Resistance Design of Steel Structures: Analysis of Fire Protection Methods**

[1]Mrs. M. Muthuselvi, [2]Mr. K. Nalantha

[1, 2]Assistant professor, Department of Civil Engineering,

Mother Terasa College of Engineering and Technology

Abstract: This abstract focuses on the fire resistance design of steel structures and presents a comparative analysis of different fire protection methods. It emphasizes the importance of designing steel structures to withstand fire events and prevent structural failure. The abstract discusses various fire protection methods, including passive fire protection (such as fire-resistant coatings and enclosures) and active fire protection (such as sprinkler systems and fire suppression systems). It highlights the need to consider factors such as fire resistance ratings, cost, ease of installation, and maintenance requirements when selecting the appropriate fire protection method. The abstract also emphasizes the significance of conducting fire tests and simulations to assess the performance of different fire protection methods.

Keywords: fire resistance design, steel structures, comparative analysis, fire protection methods, passive fire protection, active fire protection, fire-resistant coatings, fire enclosures, sprinkler systems, fire suppression systems, fire resistance ratings, cost, installation, maintenance, fire tests, simulations.

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15. Title: Optimization of Self-Consolidating Concrete for High Strength and Workability

[1]Dr.Thilagavathi.S, [2]Dr. Gunaselvi. S, [3]Ms. Karthika.K, [4]Ms.Chandrika.C
[1]Principal, [2]Assistant professor, [3,4]U.G.student, Department of Civil Engineering,
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Abstract: Self-consolidating concrete (SCC) is an innovative concrete mix that exhibits high flowability and does not require external vibration during placement. The combination of high strength and excellent workability makes SCC a preferred choice for various construction applications. This study focuses on the optimization of self-consolidating concrete to achieve a balance between high strength and workability. Various combinations of cementitious materials, mineral admixtures, and superplasticizers were studied to identify the most suitable combination for achieving the desired properties. The fresh properties, such as slump flow, passing ability, and segregation resistance, were evaluated to assess the workability of SCC.

Keywords: Self-consolidating concrete, high strength, workability, mix design, mineral admixtures, superplasticizers, compressive strength, durability, construction materials.

16. Title: Utilization of Calcium Carbide Residue Stabilization for Expansive Clay Soils in Foundation Engineering

[1]Ms.Vidhya.S, [2]Mrs.Dennis flora.P, [3]Ms. Monika.K
[1,2]Assistant professor, [3]U.G.student, Department of Civil Engineering,
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Abstract: Expansive clay soils pose significant challenges in foundation engineering due to their high plasticity and volumetric changes with moisture variations. This study investigates the utilization of calcium carbide residue (CCR) stabilization as a viable technique to improve the engineering properties of expansive clay soils for foundation applications. Various laboratory tests were conducted to assess the effectiveness of CCR in mitigating the expansive behavior and enhancing the load-bearing capacity of clay soils.The effects of curing time and environmental conditions were also studied to understand the long-term performance of CCR-stabilized clay soils.

Keywords: Calcium carbide residue (CCR) stabilization, expansive clay soils, foundation engineering, swelling potential, compressive strength, shear strength, permeability, curing time, environmental conditions, sustainable construction.

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17. Title: Durability of Fiber-Reinforced Concrete in Aggressive Environments

[1]Dr. Gunaselvi. S, [2]Mrs.Padmarani.R, [3]Ms. Muthumeena.P, [4]Ms.Priyadharshini.S
[1, 2]Assistant professor, [3, 4]U.G.student, Department of Civil Engineering,
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Abstract: Fiber-reinforced concrete (FRC) has gained prominence as a solution to enhance the durability of concrete structures in aggressive environments. This study investigates the durability of fiber-reinforced concrete under exposure to aggressive conditions. The incorporation of fibers reduced the formation and propagation of micro-cracks, limiting the ingress of aggressive agents and protecting the concrete matrix from degradation. Different types of fibers exhibited varied resistance to specific aggressive agents, highlighting the importance of selecting appropriate fibers based on the exposure conditions. The utilization of FRC can extend the service life of concrete structures, reduce maintenance costs, and promote sustainable construction practices.

Keywords: Fiber-reinforced concrete, durability, aggressive environments, chloride-rich solutions, sulfate attack, freeze-thaw cycles, steel fibers, polypropylene fibers, glass fibers, micro-cracks, real-world case studies, infrastructure.

18. Title: Study on the potential for waste-to-energy technologies to contribute to renewable energy generation and reduce greenhouse gas emissions.

[1]Ms.Manju.R, [2]Ms.Vidhya.S, [3]Ms. Pothumpen.A
[1, 2]Assistant professor, [3]U.G.student, Department of Civil Engineering,
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Abstract: Waste-to-energy (WtE) technologies have garnered increasing attention as a potential solution to address both waste management challenges and the growing need for renewable energy sources. This study explores the potential for waste-to-energy technologies to contribute to renewable energy generation and reduce greenhouse gas emissions. A comprehensive literature review and case studies of existing waste-to-energy facilities are conducted to evaluate the environmental and energy benefits of these technologies.

Keywords: Waste-to-energy, renewable energy, greenhouse gas emissions, waste management, energy recovery, incineration, anaerobic digestion, gasification, environmental impacts, climate change mitigation, sustainable development.

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19. Title: Recycled Materials in Concrete: Paving the Way for Green Construction

[1]Mrs.Priya.R, [2]Dr.Thilagavathi.S, [3]Ms.Maheshwari.V
[1]Assistant professor, [2]Principal, [3]U.G.student, Department of Civil Engineering,
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Abstract: With the increasing focus on sustainable construction practices, the incorporation of recycled materials in concrete has emerged as a promising approach to reduce environmental impact and promote resource conservation. This study explores the utilization of various recycled materials, including recycled aggregates, fly ash, slag, and other industrial by-products, in concrete to pave the way for green construction. Different concrete mixtures were designed, and their properties, including mechanical strength, workability, and durability, were extensively investigated.Optimal proportions of recycled materials were identified to achieve the desired performance while ensuring sustainable production practices. Additionally, the study highlighted the importance of quality control and proper processing of recycled materials to maintain consistency and uniformity in the concrete mixtures.
Keywords: Recycled materials, concrete, green construction, sustainable construction, recycled aggregates, fly ash, slag, resource conservation, mechanical strength, workability, durability.

20. Title: Optimization of Nutrient Removal in Constructed Wetlands for Agricultural Runoff Treatment

[1]Mr. M. Vijay Prakash
[1]Assistant professor, Department of Civil Engineering,
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Abstract: Constructed wetlands have gained recognition as a promising approach for treating agricultural runoff and mitigating nutrient pollution. This study investigates the optimization of nutrient removal in constructed wetlands for agricultural runoff treatment. Various design configurations and operational parameters were examined to enhance nutrient removal efficiency. Different substrate materials, hydraulic retention times (HRTs), and plant species were tested to evaluate their impacts on nutrient removal.
Keywords: Constructed wetlands, nutrient removal, agricultural runoff, optimization, nitrogen, phosphorus, substrate materials, hydraulic retention time, plant species, water quality, environmental protection.

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21.Title: Effect of Fiber Reinforcement on the Shear Strength of Stabilized Soils in Foundation Engineering

[1]Mrs.Chithirai Selvi.N, [2]Mrs.Dennis flora.P, [3]Ms.Umamaheswari.K
[1, 2]Assistant professor, [3]U.G.student, Department of Civil Engineering,
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Abstract: Soil stabilization using fiber reinforcement has gained popularity as an effective technique to improve the shear strength and overall performance of weak soils in foundation engineering applications. This study investigates the effect of fiber reinforcement on the shear strength of stabilized soils. The utilization of fiber reinforcement provides a valuable approach to enhance the stability and load-bearing capacity of weak soils, contributing to safer and more sustainable foundation designs.

Keywords: Fiber reinforcement, shear strength, stabilized soils, foundation engineering, soil stabilization, polypropylene fibers, nylon fibers, steel fibers, internal friction, cohesion, soil-fiber interaction.

22.Title: Enhancement of Biogas Production through Anaerobic Co-digestion of Organic Wastes

[1]Mr. A. Ramakrishnan, [2]Ms. A. Anitha
[1, 2]Assistant professor, Department of Civil Engineering,
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Abstract: Biogas production through anaerobic digestion is an environmentally friendly and renewable energy generation process. This study focuses on enhancing biogas production through the anaerobic co-digestion of organic wastes. Various organic waste substrates, such as food waste, agricultural residues, and wastewater sludge, were co-digested in laboratory-scale and full-scale digesters to evaluate the synergistic effects on biogas production. By exploring diverse waste mixtures and optimizing process parameters, anaerobic co-digestion presents a promising pathway for sustainable waste treatment and biogas generation.

Keywords: Biogas production, anaerobic digestion, organic wastes, co-digestion, renewable energy, waste management, circular economy, digestate, microbial activity, greenhouse gas emissions.

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23. Title: Influence of Mineral Admixtures on Compressive Strength of Fly Ash-based Geopolymer Concrete

[1]Ms.Gayathri.G, [2]Mrs.Priya.R, [3]Ms.Lakshmi.A
[1,2]Assistant professor, [3]U.G.student, Department of Civil Engineering,
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Abstract: Geopolymer concrete, an eco-friendly alternative to traditional Portland cement concrete, has gained attention due to its reduced carbon footprint and improved durability. This study investigates the influence of mineral admixtures on the compressive strength of fly ash-based geopolymer concrete. Various mineral admixtures, including silica fume and ground granulated blast furnace slag (GGBFS), were incorporated into the geopolymer mixtures at different replacement levels. A comprehensive experimental program was conducted to assess the fresh and hardened properties of the geopolymer concrete, focusing on compressive strength.

Keywords: Geopolymer concrete, fly ash, mineral admixtures, compressive strength, silica fume, ground granulated blast furnace slag (GGBFS), alkali activators, pozzolanic materials, microstructure, sustainable construction.

24. Title: The impact of improper solid waste management on the environment and public health.

[1]Dr. Gunaselvi. S, [2]Ms.Manju.R, [3]Ms.Karthika.K, [4]Ms.Chandrika.C
[1,2]Assistant professor, [3,4]U.G.student, Department of Civil Engineering,
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Abstract: Improper solid waste management poses a significant threat to the environment and public health. This study examines the impact of improper solid waste management practices on the environment and the health of communities. A comprehensive literature review and case studies are conducted to understand the adverse effects of inadequate waste management systems. Exposure to hazardous waste and improper disposal sites can result in respiratory illnesses, gastrointestinal disorders, skin infections, and other health issues, disproportionately affecting vulnerable populations residing in proximity to waste disposal areas. The implementation of proper waste collection, recycling, and disposal practices, along with public awareness and education, is essential in mitigating the adverse impacts of improper waste management.

Keywords: Solid waste management, environment, public health, improper disposal, waste pollution, health risks, waste types, hazardous waste, waste disposal sites, environmental remediation.

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25.Title: Waste Minimization Strategies in Municipal Solid Waste Management

[1]Mr. S. Vijayabaskaran
[1]Assistant professor, Department of Civil Engineering,
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Abstract: Municipal solid waste (MSW) management presents a significant challenge in urban areas, given the increasing waste generation and limited landfill capacities. This study focuses on waste minimization strategies in MSW management to reduce the environmental impact and optimize resource utilization. Waste prevention measures, such as public awareness campaigns and sustainable packaging, can significantly reduce waste generation at its source. Recycling and composting programs divert recyclable materials and organic waste from landfills, contributing to increased resource recovery and reduced disposal costs.

Keywords: Waste minimization, municipal solid waste management, waste prevention, recycling, composting, source separation, resource utilization, environmental impact, economic implications, circular economy, sustainable packaging.

26.Title: Implementation of an efficient multiplier using dadda algorithm

[1]Ms. R.Yogeshwari, [2]Mrs Nithyapoorani, [3]Ms Kavya C, [4]Ms .Safrin Nisha S
[1,2]Asst. Prof., Dept. of ECE, Sri Bharathi Engineering College for Women, Pudkukkotai.
[3,4]UG Students, Dept. of ECE, Sri Bharathi Engineering College for Women, Pudkukkotai.

Abstract: The performance of the system such as Digital Signal Processor and Image Processor is determined by the multiplier. Because multiplier is the slowest element. Multiplier is the heart of the MAC unit. MAC is the Multiplier and Accumulator unit. MAC is Kernel operation in DSP. MAC has two components which are multiplier and accumulator. Multiplier produces the partial products. Output of multiplier that is the partial products are given to the accumulator. Accumulator performs the addition operation. These multiplication and addition operation can be performed in one round .Hence it is called as MAC Unit. The performance of the DSP is based on the MAC Unit. But the performance of the MAC is based on the speed up of the multiplier. Hence DADDA multiplier is an efficient compared with the WALLACE TREE multiplier. DADDA multiplier is the refinement of the WALLACE TREE multiplier. Since the DADDA multiplier has the fast performance, we implement the proposed technique in the same and the improved performance is compared with the regular DADDA multiplier. In FAST DADDA multiplier the output of the partial products are computed independently in parallel and those values are added using the high speed hybrid final adder to get the final products.
Keywords:- Efficient multiplier, Dadda algorithm, Implementation, Multiplication algorithm, Hardware Multiplier, High-performance multiplier, Dadda tree, Bit-level parallelism, Low power multiplier

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27. Title: Automated Detection of Brain Tumor Segmentation in MRI Images using Deep Learning

[1]Mrs. T.K.Mohanapriya, [2]Mrs G.Vidya, [3]Ms Arthi S, [4]Ms. Desika G.
[1,2]Asst. Prof., Dept. of ECE, Sri Bharathi Engineering College for Women, Pudkukkotai.
[3,4]UG Students, Dept. of ECE, Sri Bharathi Engineering College for Women, Pudkukkotai

Abstract: This paper presents a novel approach for automated brain tumor segmentation in magnetic resonance imaging (MRI) images using deep learning techniques. The proposed method utilizes a convolutional neural network (CNN) architecture that incorporates both local and global contextual information to accurately identify tumor regions. The CNN model is trained on a large dataset of annotated MRI images, allowing it to learn complex patterns and features associated with brain tumors. Experimental results demonstrate the effectiveness of the proposed approach, achieving high accuracy and robustness in tumor segmentation.

Keywords: brain tumor, MRI, deep learning, convolutional neural network, segmentation.

28. Title: High-Speed and Reliable Interconnect Design Using Differential Signaling Technique

[1]Ms. R.Yogeshwari, [2]Ms T. Suganthi, [3]Ms.Ananthi P, [4]Ms Manisha S
[1,2]Asst. Prof., Dept. of ECE, Sri Bharathi Engineering College for Women, Pudkukkotai.
[3,4]UG Students, Dept. of ECE, Sri Bharathi Engineering College for Women, Pudkukkotai.

Abstract: This paper presents a novel approach for designing high-speed and reliable interconnects using the differential signaling technique. Traditional single-ended signaling suffers from issues such as noise, crosstalk, and power dissipation, limiting the achievable data rates. The proposed design employs differential signaling to mitigate these challenges and improve signal integrity. The experimental results demonstrate significant improvements in data transmission rates, reduced noise, and enhanced reliability compared to conventional interconnect designs. This research contributes to the advancement of high-speed and reliable VLSI interconnect designs.

Keywords: VLSI design, interconnect, high speed, reliability, differential signaling

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29. Title : Nanomaterials for Energy Harvesting in Self-Powered Electronics

[1]Dr M.Sobana, [2]Mr.Madhusoothanan
[1,2]Asst. Prof., Dept. of ECE, JJ Colege of Engineering, Trichy

Abstract: This paper explores the applications of nanomaterials in energy harvesting for self-powered electronics. As the demand for portable and wearable devices grows, the need for self-sustainable power sources becomes increasingly critical. We investigate various nanomaterials, including piezoelectric materials, thermoelectric materials, and triboelectric nanogenerators, that enable the conversion of ambient energy into electrical power. We discuss their unique properties and mechanisms for energy harvesting, as well as their integration into nano-scale electronic devices. By harnessing the capabilities of nanomaterials, we demonstrate the potential for self-powered electronics, reducing the reliance on external power sources and enabling the development of autonomous and energy-efficient systems.

Keywords: Nanomaterials, energy harvesting, self-powered electronics, piezoelectric materials, thermoelectric materials, triboelectric nanogenerators.

30. Title: Reliability-Aware Design Techniques for VLSI Circuits in Harsh Environments

[1]Ms. V.Sagayamary, [2]Mrs M.Suganya, [3]Ms Abirami S, [4]Ms Dhivya L
[1,2]Asst. Prof., Dept. of ECE, Sri Bharathi Engineering College for Women, Pudkukkotai.
[3,4]UG Students, Dept. of ECE, Sri Bharathi Engineering College for Women, Pudkukkotai.

Abstract: This paper addresses the challenges of designing reliable VLSI circuits for operation in harsh environments, including extreme temperature variations and radiation exposure. Harsh environments pose significant risks to the performance and longevity of VLSI circuits, making reliability a critical design consideration. The paper investigates various techniques such as redundancy, error correction codes, and radiation-hardening approaches to enhance the reliability of VLSI circuits. The experimental evaluations demonstrate improved fault tolerance and reliability under harsh environmental conditions. This research contributes to the development of reliable VLSI designs for mission-critical applications.

Keywords: VLSI design, reliability, harsh environments, temperature variation, radiation

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31. Title: Design and Simulation of Low-Power SRAM Using Multisim

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Abstract: This paper presents the design and simulation of a low-power static random-access memory (SRAM) using Multisim software. SRAM plays a crucial role in modern VLSI systems, and reducing its power consumption is essential for overall system efficiency. The proposed design employs advanced techniques such as voltage scaling and optimized circuit architecture to achieve significant power reduction while maintaining satisfactory performance. Multisim simulation results demonstrate the effectiveness of the design in achieving low-power SRAM operation, providing valuable insights for future VLSI memory designs.

Keywords: VLSI design, SRAM, low power, simulation, Multisim

32. Title: Exploring FPGA-Based Prototyping Using Multisim for VLSI Design Verification

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Abstract: This paper explores the application of FPGA-based prototyping using Multisim software for VLSI design verification. FPGA-based prototyping offers a cost-effective and efficient approach to validate VLSI designs before fabrication. The paper discusses the integration of Multisim with FPGA platforms, enabling rapid design prototyping and functional verification. Several case studies are presented to demonstrate the effectiveness of Multisim in FPGA-based prototyping for various VLSI designs. The results showcase the advantages of using Multisim for early-stage verification, reducing design iterations and time-to-market.

Keywords: VLSI design, FPGA-based prototyping, verification, Multisim

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33. Title:Deep Reinforcement Learning for Autonomous Robot Navigation in Dynamic Environments

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Abstract: In this paper, we propose a deep reinforcement learning framework for autonomous robot navigation in dynamic environments. Traditional navigation algorithms struggle to handle dynamic obstacles, such as moving pedestrians or other robots. Our approach combines deep neural networks with reinforcement learning to enable the robot to learn navigation policies in real-time. We introduce an environment model that incorporates dynamic elements, and the robot learns to perceive and respond to changes in its surroundings. Through extensive experiments, we demonstrate that our approach outperforms traditional methods in terms of collision avoidance and navigation efficiency.

Keywords: deep reinforcement learning, autonomous robot navigation, dynamic environments, deep neural networks, collision avoidance.

34. Title: Exploration of Multisim for Design and Optimization of Low-Power Voltage Controlled Oscillators

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Abstract: This paper explores the application of Multisim software for the design and optimization of low-power voltage-controlled oscillators (VCOs) in VLSI circuits. VCOs are fundamental building blocks in frequency generation and modulation applications. The paper discusses the design considerations and challenges associated with achieving low-power operation in VCOs. Multisim simulations are utilized to optimize key parameters such as biasing, device sizing, and circuit topology to minimize power consumption while maintaining satisfactory performance. The experimental results demonstrate the effectiveness of Multisim in designing low-power VCOs for various VLSI applications.

Keywords: VLSI design, voltage-controlled oscillator (VCO), low power, optimization, Multisim

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35. Title: Automated Analysis of Retinal Fundus Images for Diabetic Retinopathy Detection

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Abstract: This paper presents an automated analysis framework for detecting diabetic retinopathy (DR) in retinal fundus images. The proposed method utilizes image processing techniques and machine learning algorithms to extract relevant features and classify retinal images into different stages of DR severity. Various image features such as microaneurysms, hemorrhages, exudates, and vessel abnormalities are extracted and used as input to a classification model. The system achieves high accuracy in detecting DR, demonstrating its potential as a screening tool for early identification of the disease.

Keywords: diabetic retinopathy, retinal fundus images, image processing, machine learning, feature extraction.

36. Title: Wireless Sensor Network for Environmental Monitoring using Arduino and IoT

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Abstract: This paper presents a wireless sensor network (WSN) designed for environmental monitoring. The system utilizes Arduino-based sensor nodes equipped with temperature and humidity sensors to collect real-time data. The acquired data is then transmitted wirelessly to a central node for processing and analysis. The study explores the integration of IoT principles with Arduino programming, enabling remote monitoring and data-driven decision-making. The proposed system offers a cost-effective and scalable solution for environmental monitoring applications.

Keywords: Wireless sensor network, Arduino, IoT, environmental monitoring, temperature sensor, humidity sensor.

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37. Title: Real-Time Tracking of Environmental Conditions using IoT-Enabled Sensor Networks

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Abstract: This research aims to develop a real-time tracking system for environmental conditions using IoT-enabled sensor networks. Arduino-based sensor nodes equipped with temperature and humidity sensors are deployed to collect data from multiple locations. The acquired data is transmitted wirelessly to a central server for processing and visualization. The study investigates the communication protocols, data aggregation techniques, and programming approaches required for efficient data management in large-scale sensor networks. The proposed system enables accurate monitoring and analysis of environmental conditions in real-time.

Keywords: Real-time tracking, environmental conditions, IoT-enabled sensor networks, Arduino, temperature sensor, humidity sensor, data aggregation.

38. Title: Energy-Efficient Topology Control Mechanism for MANETs based on Clustering

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Abstract: Energy conservation is crucial in Mobile Ad hoc Networks (MANETs) due to the limited battery power of mobile nodes. This paper proposes an energy-efficient topology control mechanism for MANETs based on clustering. The mechanism divides the network into clusters, with a cluster head responsible for inter-cluster communication. It dynamically adjusts the cluster structure based on the energy levels of nodes, aiming to balance energy consumption and prolong network lifetime. The mechanism also incorporates transmission power control to reduce energy waste in inter-cluster communication. Performance evaluations demonstrate that the proposed mechanism achieves significant energy savings and network lifetime extension compared to traditional approaches.

Keywords: MANETs, energy-efficient topology control, clustering, cluster head, network lifetime, energy conservation, transmission power control

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39. Title: Efficient Data Compression Techniques for IoT-Embedded Systems

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Abstract: This paper focuses on efficient data compression techniques for IoT-embedded systems. The study addresses the challenges of limited bandwidth and storage capacity in IoT networks and proposes compression algorithms tailored for resource-constrained environments. Arduino-based microcontrollers are utilized to implement the compression techniques, optimizing data transmission and storage. The research evaluates the trade-off between compression ratio, processing overhead, and data quality. The experimental results demonstrate significant reductions in data size while maintaining acceptable accuracy for various IoT applications.

Keywords: Data compression, IoT-embedded systems, Arduino, microcontrollers, compression algorithms, bandwidth optimization, storage optimization.

40. Title: Wireless Health Monitoring System using IoT-Embedded Devices

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Abstract: This research focuses on the development of a wireless health monitoring system using IoT-embedded devices. Arduino-based wearable sensors are utilized to collect vital signs such as body temperature and heart rate. The acquired data is transmitted wirelessly to a central monitoring station for analysis and alert generation. The study investigates the challenges of reliable data transmission, data privacy, and programming techniques for real-time monitoring. The proposed system enables continuous health monitoring, facilitating early detection of anomalies and timely medical intervention.

Keywords: Wireless health monitoring, IoT-embedded devices, Arduino, wearable sensors, vital signs, data privacy, programming techniques.

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41. Title: Novel Antenna Array Design for Beamforming Applications in Microwave Communication

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Abstract: This paper proposes a novel antenna array design for beamforming applications in microwave communication systems. Beamforming plays a vital role in enhancing the performance of wireless communication by focusing the transmitted or received signals in desired directions. The proposed antenna array utilizes advanced techniques such as phased arrays, sub-arraying, and adaptive beamforming algorithms to achieve high-resolution beamforming. The design process involves optimizing the array geometry, element spacing, and excitations to achieve desirable beam characteristics, such as beamwidth, sidelobe level, and beam steering capabilities. The performance of the designed antenna array is evaluated using electromagnetic simulation tools and practical measurements. The presented design offers significant improvements in beamforming performance, making it suitable for next-generation microwave communication systems.

Keywords: Microwave engineering, Antenna array, Beamforming, Phased arrays, Sub-arraying, Adaptive beamforming, Array geometry, Element spacing, Excitations, Electromagnetic simulation, Wireless communication.

42. Title: Intelligent Energy Management System for Smart Buildings using IoT-Embedded Devices

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Abstract: This paper presents an intelligent energy management system for smart buildings using IoT-embedded devices. Arduino-based sensor nodes are deployed to monitor energy consumption, temperature, and occupancy. The acquired data is processed and analyzed in real-time, enabling automated control of lighting, heating, and cooling systems. The study explores the integration of IoT principles with embedded systems, focusing on energy optimization techniques and programming methodologies. The proposed system offers energy savings, comfort optimization, and sustainable building operations. Keywords: Intelligent energy management, smart buildings, IoT-embedded devices, Arduino, sensor nodes, energy optimization, programming methodologies.

Keywords: IoT, embedded systems, Arduino, sensors, temperature measurement, humidity measurement, programming, wireless communication, energy efficiency, real-time monitoring, fault detection, data compression, low-power design, indoor climate control, health monitoring, traffic management, agriculture monitoring, energy management, smart buildings.

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43. Title: Fiber Optic Backbone Networks: Enabling High-Speed Data Transmission in Large-Scale Infrastructures

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Abstract: This research paper focuses on the significance of fiber optic backbone networks in facilitating high-speed data transmission within large-scale infrastructures. The abstract discusses the role of fiber optic backbone networks in connecting various network segments and ensuring seamless communication between them. It explores the advantages of using fiber optics for backbone networks, such as high bandwidth, low latency, and scalability. The abstract also addresses the challenges associated with deploying and maintaining fiber optic backbone networks, including cost considerations and network expansion. By examining these aspects, this paper provides valuable insights for network architects and administrators in designing and managing efficient fiber optic backbone networks.

Keywords: Fiber optic backbone networks, high-speed data transmission, large-scale infrastructures, network segments, communication, bandwidth, latency, scalability, network architects, network administrators, cost considerations, network expansion

44. Title: Fiber Optics in Computer Networks: Enhancing Data Transmission Speed and Reliability

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Abstract: This paper explores the application of fiber optics in computer networks and highlights its significant role in improving data transmission speed and reliability. The abstract delves into the advantages of fiber optic cables over traditional copper cables, such as higher bandwidth, longer transmission distances, and immunity to electromagnetic interference. The abstract also discusses the various components of a fiber optic network, including transceivers, connectors, and switches. Additionally, it examines key considerations for implementing fiber optic networks, such as installation and maintenance challenges. Overall, this paper aims to provide a comprehensive overview of fiber optics in computer networks and their impact on modern data communication.

Keywords: Fiber optics, computer networks, data transmission, reliability, bandwidth, copper cables, electromagnetic interference, fiber optic cables, transceivers, connectors, switches, installation, maintenance.

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45. Title: Fiber Optic Network Monitoring: Ensuring Performance and Troubleshooting in Computer Networks

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Abstract: This research paper highlights the significance of fiber optic network monitoring for ensuring optimal performance and troubleshooting in computer networks. The abstract discusses the challenges associated with monitoring fiber optic networks, including signal loss, power fluctuations, and network congestion. It explores various monitoring techniques such as optical time-domain reflectometry (OTDR), optical spectrum analyzers, and network traffic analysis tools. Additionally, the abstract addresses the role of proactive monitoring in identifying potential issues before they impact network performance. By examining these aspects, this paper aims to provide guidelines for effective fiber optic network monitoring and troubleshooting practices.

Keywords: Fiber optic network monitoring, optimal performance, troubleshooting, signal loss, power fluctuations, network congestion, optical time-domain reflectometry, optical spectrum analyzers, network traffic analysis, proactive monitoring, network performance.

46. Title: Fiber Optic Network Virtualization: Enhancing Flexibility and Scalability in Virtualized Environments

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Abstract: This research paper investigates the application of fiber optic network virtualization to enhance flexibility and scalability in virtualized environments. The abstract discusses the challenges of traditional network infrastructure in supporting dynamic resource allocation in virtualized systems. It explores the advantages of leveraging fiber optics for network virtualization, including increased flexibility, simplified management, and improved resource utilization. Additionally, the abstract addresses the integration of fiber optic-based software-defined networking (SDN) and network functions virtualization (NFV) in virtualized environments. By examining these aspects, this paper aims to provide insights into utilizing fiber optics to optimize network performance and agility in virtualized infrastructures.

Keywords: Fiber optic network virtualization, flexibility, scalability, virtualized environments, traditional network infrastructure, dynamic resource allocation, fiber optics advantages, simplified management, resource utilization, software-defined networking, SDN, network functions virtualization, NFV, network performance, network agility, virtualized

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47. Title: Fiber Optic Network Economics: Cost Analysis and Return on Investment in Computer Networks

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Abstract: This research paper focuses on the economics of fiber optic networks, including cost analysis and return on investment (ROI) in computer networks. The abstract discusses the initial investment costs associated with deploying fiber optic infrastructure compared to traditional copper-based networks. It explores the long-term cost advantages of fiber optics, such as lower maintenance expenses and higher scalability. Additionally, the abstract addresses the calculation of ROI for fiber optic network deployments, considering factors such as network lifespan and future network expansion. By examining these aspects, this paper aims to provide insights into the economic considerations of implementing fiber optic networks in computer networks.

Fiber optic network economics, cost analysis, return on investment, computer networks
Keywords:, investment costs, infrastructure deployment, copper-based networks, long-term cost advantages, maintenance expenses, scalability, ROI calculation, network lifespan, network expansion.

48. Title: IoT-Enabled Crop Monitoring and Disease Detection: Enhancing Plant Health Management

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Abstract: This research examines how IoT technologies can enable real-time crop monitoring and disease detection in agriculture. The paper discusses how IoT sensors and imaging devices can monitor plant growth, detect early signs of diseases, and alert farmers about potential threats. It explores the role of machine learning algorithms in analyzing sensor data and providing timely insights for effective plant health management.

Keywords: IoT, Internet of Things, Crop Monitoring, Disease Detection, Agriculture, IoT Sensors, Imaging Devices, Plant Growth, Early Signs, Machine Learning Algorithms, Plant Health Management.

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49. Title: Image Registration and Alignment: Combining Multiple Images for Analysis

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Abstract: This study focuses on image registration and alignment techniques used to combine multiple images for analysis. The research explains rigid and non-rigid registration methods and their applications in medical imaging, remote sensing, and image mosaicking. It discusses how image registration enables accurate comparison and analysis of images taken from different perspectives or at different times.

Keywords: Image Registration, Image Alignment, Image Analysis, Rigid Registration, Non-Rigid Registration, Medical Imaging, Remote Sensing, Image Mosaicking.

50. Title: Pervasive Computing: The Ubiquitous Integration of Smart Devices and Sensors

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Abstract: This paper introduces the concept of pervasive computing, where smart devices and sensors are seamlessly integrated into our everyday environments. The research explores the key components of pervasive computing, including sensor networks, mobile computing, and Internet of Things (IoT) technologies. It discusses the challenges and opportunities of creating a pervasive computing ecosystem that enables seamless interactions between humans and smart environments.

Keywords: Pervasive Computing, Smart Devices, Sensors, Sensor Networks, Mobile Computing, Internet of Things, IoT, Smart Environments, Ubiquitous Integration.

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51. Title: Secure Localization in Wireless Networks: Challenges and Solutions

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Abstract: Location information plays a crucial role in many wireless network applications, such as asset tracking and emergency services. However, ensuring the security and accuracy of localization data poses significant challenges. This paper investigates the security threats associated with wireless network localization and presents potential solutions, including encryption techniques, authentication mechanisms, and anomaly detection algorithms. The findings contribute to the development of secure and reliable wireless network localization systems.

Keywords: wireless networks, localization, security, encryption, authentication, anomaly detection

52. Title: Energy-Efficient Resource Allocation in Wireless Networks

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Abstract: With the growing demand for wireless communication, optimizing energy consumption has become a critical concern. This research focuses on energy-efficient resource allocation strategies in wireless networks. By intelligently allocating radio resources, such as power and bandwidth, the proposed approach aims to minimize energy consumption while maintaining the desired quality of service. The results provide insights into efficient resource management techniques that can significantly reduce the ecological footprint of wireless networks.

Keywords: wireless networks, energy efficiency, resource allocation, power management, quality of service

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53.Title: Quality of Service Management in Heterogeneous Wireless Networks

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Abstract: Heterogeneous wireless networks encompass a diverse range of access technologies, including cellular networks, Wi-Fi, and satellite systems. Ensuring quality of service (QoS) across such heterogeneous environments is a significant challenge. This paper explores QoS management techniques that enable seamless handover, bandwidth allocation, and prioritization of traffic in heterogeneous wireless networks. The study aims to enhance user experience and optimize resource utilization.

Keywords: wireless networks, heterogeneous networks, quality of service, seamless handover, bandwidth allocation, traffic prioritization

54.Title: Secure Data Storage and Privacy Preservation in Cloud Computing

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Abstract: This study addresses the challenges of secure data storage and privacy preservation in cloud computing. It investigates encryption mechanisms, access control techniques, and privacy-enhancing protocols to safeguard sensitive data in cloud environments. The research findings provide valuable insights for organizations and individuals seeking to protect their data while leveraging the benefits of cloud computing.

Keywords: Cloud computing, Data storage, Privacy preservation, Encryption, Access control, Privacy-enhancing protocols.

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55. Title: Millimeter Wave Technology for Next-Generation Wireless Networks

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Abstract: Millimeter wave (mmWave) technology is emerging as a key enabler for the next generation of wireless networks. This paper explores the unique characteristics of mmWave frequencies and their potential applications in high-speed data transmission, ultra-low latency communications, and massive device connectivity. The study highlights the challenges and opportunities associated with mmWave technology deployment, offering insights into the future of wireless network infrastructure.

Keywords: wireless networks, millimeter wave technology, high-speed data transmission, low latency, massive device connectivity

56. Title: Edge Computing for Real-time Data Processing in Cloud Environments

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Abstract: This research explores the integration of edge computing with cloud environments to enable real-time data processing. It investigates edge-cloud collaboration, data offloading techniques, and latency-aware algorithms to achieve low-latency data processing and reduce network congestion. The findings contribute to the development of efficient and responsive cloud systems capable of handling time-sensitive applications.

Keywords: Cloud computing, Edge computing, Real-time data processing, Edge-cloud collaboration, Data offloading, Latency-aware algorithms.

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57. Title: AI-Based Personalized Treatment Plans for COVID-19 Patients: Optimizing Healthcare Outcomes

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Abstract: This research examines the use of AI in developing personalized treatment plans for COVID-19 patients. The paper discusses how AI-driven models can analyze patient data, medical records, and clinical outcomes to recommend tailored treatment options. It also explores the challenges and potential benefits of AI-assisted personalized medicine in improving healthcare outcomes during the COVID-19 pandemic.

Keywords: AI, Artificial Intelligence, Personalized Treatment Plans, COVID-19 Patients, Patient Data, Medical Records, Clinical Outcomes, Treatment Options, Personalized Medicine, Healthcare Outcomes.

58. Title: AI-Powered Remote Patient Monitoring during COVID-19: Enabling Telehealth and Healthcare Resilience

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Abstract: This study examines the application of AI in remote patient monitoring during the COVID-19 pandemic. The paper discusses how AI-driven technologies can enable telehealth services, monitor patient vitals remotely, and detect early signs of deterioration, thereby reducing the burden on healthcare systems and improving patient outcomes. It also addresses privacy and security concerns in AI-driven remote monitoring solutions.

Keywords: AI, Artificial Intelligence, Remote Patient Monitoring, COVID-19, Telehealth, Healthcare Resilience, Vitals Monitoring, Early Detection, Healthcare Systems, Patient Outcomes, Privacy, Security.

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59. Title: AI-Driven Diagnostic Tools for COVID-19: Advancements, Accuracy, and Challenges

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Abstract: This paper explores the use of Artificial Intelligence (AI) in developing diagnostic tools for COVID-19. The research discusses the various AI techniques employed, such as machine learning, deep learning, and natural language processing, to detect and predict COVID-19 infections. The study examines the accuracy and reliability of AI-based diagnostic models, along with the challenges faced in data availability, model generalization, and ethical considerations.

Keywords: AI, Artificial Intelligence, COVID-19, Diagnostic Tools, Machine Learning, Deep Learning, Natural Language Processing, Infection Detection, Prediction, Data Availability, Model Generalization, Ethical Considerations.

60. Title: AI-Enabled Drug Discovery for COVID-19: Accelerating Research and Therapeutic Development

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Abstract: This study explores the role of AI in drug discovery for COVID-19 treatment. The paper discusses how AI algorithms can analyze vast amounts of biological data to identify potential drug candidates and repurpose existing drugs for COVID-19 therapy. It also examines the challenges and opportunities in deploying AI-driven drug discovery approaches, including data quality, regulatory compliance, and clinical validation.

Keywords: AI, Artificial Intelligence, Drug Discovery, COVID-19, Therapeutic Development, Biological Data, Drug Candidates, Repurposing, Data Quality, Regulatory Compliance, Clinical Validation.

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61. Title: AI-Enabled Social Distancing Monitoring during COVID-19: Privacy and Ethical Considerations

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Abstract: This study focuses on the use of AI in monitoring social distancing compliance during the COVID-19 pandemic. The paper discusses how AI-powered surveillance systems can track crowd density and adherence to social distancing guidelines. It explores the ethical implications of using AI for public health monitoring, emphasizing the importance of privacy protection and avoiding potential biases in surveillance practices.

Keywords: AI, Artificial Intelligence, Social Distancing Monitoring, COVID-19, Crowd Density, Adherence, Surveillance Systems, Ethical Considerations, Privacy Protection, Bias Avoidance.

62. Title: Audio and Video Watermarking: Copyright Protection and Content Authentication

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Abstract: This study focuses on audio and video watermarking techniques for copyright protection and content authentication. The paper explores the embedding of imperceptible watermarks into multimedia content to prove ownership and detect unauthorized modifications or copying. It discusses robust watermarking algorithms that can withstand various attacks, such as compression, filtering, and signal processing.

Keywords: Audio Watermarking, Video Watermarking, Copyright Protection, Content Authentication, Imperceptible Watermarks, Ownership Proof, Unauthorized Modifications, Robust Watermarking Algorithms.

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63. Title: Audio and Video Forensics: Detecting Manipulations and Authenticating Multimedia Content

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Abstract: This research examines audio and video forensics techniques for detecting manipulations, verifying authenticity, and analyzing multimedia evidence. The paper discusses methods for audio forgery detection, video tampering analysis, and deepfake detection, as well as tools for forensic enhancement and content authentication. It also explores the legal implications and ethical considerations in the use of audio and video forensics in legal proceedings.

Keywords: Audio Forensics, Video Forensics, Manipulation Detection, Authenticity Verification, Multimedia Evidence Analysis, Audio Forgery Detection, Video Tampering Analysis, Deepfake Detection, Forensic Enhancement, Content Authentication, Legal Implications, Ethical Considerations.

64. Title: Real-Time Audio and Video Communication Protocols: Ensuring Low Latency and Quality

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Abstract: This paper examines real-time audio and video communication protocols and their role in ensuring low latency and high-quality multimedia experiences. The research discusses protocols such as WebRTC, RTSP, and RTP, and explores techniques for packet loss recovery, jitter buffering, and adaptive congestion control. It also investigates the challenges of real-time communication over the Internet and the potential impact of 5G and future network technologies.

Keywords: Real-Time Audio Communication, Real-Time Video Communication, Communication Protocols, WebRTC, RTSP, RTP, Low Latency, High Quality, Packet Loss Recovery, Jitter Buffering, Adaptive Congestion Control, Internet Communication, 5G, Future Network Technologies.

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65. Title: Secure Computer Architecture: Mitigating Vulnerabilities and Ensuring Trustworthiness

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Abstract: This study focuses on secure computer architecture designs and techniques for mitigating hardware vulnerabilities and ensuring system trustworthiness. The paper discusses security features, such as hardware-based encryption, secure enclaves, and memory protection mechanisms. It explores the challenges of side-channel attacks, hardware Trojans, and speculative execution vulnerabilities and presents architectural solutions to enhance system security.

Keywords: Computer Architecture, Secure Architecture, Hardware Vulnerabilities, Trustworthiness, Hardware-Based Encryption, Secure Enclaves, Memory Protection, Side-Channel Attacks, Hardware Trojans, Speculative Execution Vulnerabilities, System Security.

66. Title: Smart Irrigation Systems in Precision Agriculture: Improving Water Use Efficiency

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Abstract: This study focuses on the implementation of smart irrigation systems in precision agriculture using IoT technology. The paper explores how IoT-based sensors and actuators can measure soil moisture levels, weather conditions, and crop water requirements to optimize irrigation schedules. It discusses the benefits of smart irrigation in conserving water resources, reducing water wastage, and increasing crop yield while minimizing environmental impact.

Keywords: Smart Irrigation Systems, Precision Agriculture, IoT, Internet of Things, Sensors, Actuators, Soil Moisture, Weather Conditions, Crop Water Requirements, Irrigation Schedules, Water Use Efficiency, Water Conservation, Crop Yield

67.Title: Assessing English Language Skills: Methods, Tools, and Implications

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Abstract: This study examines methods, tools, and implications of assessing English language skills. It explores the use of standardized tests, performance-based assessments, and self-assessment techniques in evaluating language proficiency. The research investigates the validity and reliability of different assessment measures and their alignment with language learning objectives. It also discusses the implications of assessment on language instruction, curriculum development, and learner motivation. The findings provide insights for educators and policymakers involved in language assessment practices.

Keywords: English language skills, assessment, methods, tools, standardized tests, performance-based assessments, self-assessment techniques, validity, reliability, language learning objectives, language instruction, curriculum development, learner motivation, policymakers

68.Title: Mastering English Language Skills: An Integrated Approach to Proficiency

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Abstract: This research explores an integrated approach to mastering English language skills, focusing on vocabulary, grammar, reading, listening, and speaking. The study investigates the effectiveness of combining language learning strategies, authentic materials, and interactive activities to enhance overall language proficiency. The findings provide valuable insights for educators and learners seeking comprehensive language skill development.

Keywords: English language skills, integrated approach, vocabulary, grammar, reading, listening, speaking, language learning strategies, authentic materials, language proficiency

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69. Title: Enhancing Vocabulary Acquisition: Effective Techniques for Expanding Word Knowledge

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Abstract: This study delves into effective techniques for enhancing vocabulary acquisition in English. It examines the role of context, word families, and word maps in expanding word knowledge. The research investigates the impact of vocabulary size on language competency and communication. The findings offer practical strategies for learners aiming to improve their lexical skills.

Keywords: Vocabulary acquisition, English language, word knowledge, context, word families, word maps, language competency, communication, lexical skills

70. Title: Beyond Numbers: Exploring Diverse Representations of Functions

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Abstract: This research paper delves into the diverse world of representing functions beyond conventional numerical forms. Functions, fundamental concepts in mathematics, can be visualized and expressed using various representations, such as graphs, tables, equations, and even verbal descriptions. The study aims to provide a comprehensive exploration of different representations of functions and their significance in understanding mathematical relationships and real-world phenomena. By examining various examples and applications, readers will gain insights into how diverse representations can provide unique perspectives and insights into the behavior and properties of functions. Additionally, this research highlights the practical significance of these representations in various fields, including physics, economics, and engineering.

Keywords: Representation of functions, graphs, tables, equations, verbal descriptions, mathematical analysis, applications, physics, economics, engineering, problem-solving.

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71. Title: Unfolding Bivariate Insights: Taylor's Series for Functions of Two Variables

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Abstract: This research paper explores the powerful mathematical tool of Taylor's series for functions of two variables, a fundamental concept in multivariable calculus. Taylor's series enables the approximation of bivariate functions around a given point using a polynomial expansion. The study aims to provide a comprehensive understanding of Taylor's series for functions of two variables, including the derivation of the series and the computation of higher-order terms. By examining various examples and applications, readers will gain insights into how Taylor's series can be used to approximate complex functions and evaluate their behavior near critical points. Additionally, this research highlights the practical significance of Taylor's series in diverse fields, such as physics, engineering, and optimization. By unfolding bivariate insights through Taylor's series, learners can enhance their mathematical proficiency and employ this valuable technique to solve problems in real-world scenarios.

Keywords: Taylor's series, functions of two variables, multivariable calculus, polynomial approximation, critical points, mathematical analysis, applications, physics, engineering, optimization, problem-solving

72. Title: Optimizing Beyond Constraints: Lagrange's Method of Undetermined Multipliers

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Abstract: This research paper explores Lagrange's method of undetermined multipliers, a powerful technique in optimization problems with constraints. Lagrange's method enables the optimization of a multivariable function subject to one or more equality constraints by introducing Lagrange multipliers. The study aims to provide a comprehensive understanding of this method and its application in solving constrained optimization problems. By examining various examples and applications, readers will gain insights into how Lagrange's method can be utilized to find extrema of functions subject to constraints in real-world scenarios. Additionally, this research highlights the practical significance of Lagrange's method in diverse fields, such as economics, engineering, and physics. By optimizing beyond constraints through Lagrange's method of undetermined multipliers, learners can enhance their mathematical proficiency and tackle complex optimization challenges.

Keywords: Lagrange's method, undetermined multipliers, optimization, constrained optimization, multivariable calculus, Lagrange multipliers, mathematical analysis, applications, economics, engineering, physics, problem-solving.

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73. Title: Decomposing Complexity: Integration of Rational Functions through Partial Fraction Decomposition

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Abstract: This research paper delves into the powerful technique of integration of rational functions through partial fraction decomposition, a fundamental tool in calculus. Rational functions, which are expressed as a ratio of polynomials, can often be difficult to integrate directly. Partial fraction decomposition involves breaking down complex rational functions into simpler fractions, making integration more manageable. The study aims to provide a comprehensive understanding of this method and its application in solving a wide range of integration problems. By exploring various examples and techniques, readers will gain insights into how to decompose complexity and transform challenging integration tasks into step-by-step computations.

Keywords:Integration, rational functions, partial fraction decomposition, calculus, mathematical analysis, engineering, physics, probability, problem-solving.

74. Title: Beyond Convergence: Analyzing Improper Integrals

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Abstract: This research paper delves into the fascinating realm of improper integrals, a fundamental concept in calculus that extends the notion of integration beyond traditional boundaries. Improper integrals arise when the limits of integration are infinite or when the integrand has singularities within the interval of integration. The study aims to provide a comprehensive understanding of improper integrals and their convergence properties, exploring techniques such as limits, comparison tests, and convergence criteria. By examining various examples and applications, readers will gain insights into how to analyze and evaluate improper integrals in both definite and indefinite forms. Additionally, this research highlights the practical significance of improper integrals in diverse fields, such as physics, engineering, and probability. By going beyond convergence and analyzing improper integrals, learners can deepen their mathematical proficiency and apply these concepts to tackle complex real-world scenarios.

Keywords: Improper integrals, convergence, calculus, limits, comparison tests, convergence criteria, mathematical analysis, applications, physics, engineering, probability, problem-solving.

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75. Title: Beyond 2D: Calculating Volumes of Solids in Two Variables

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Abstract: This research paper explores the methods for calculating volumes of solids bounded by two-variable functions in multivariable calculus. Moving beyond traditional 2D shapes, such as areas under curves, the study delves into the intricacies of finding the volume of three-dimensional solids in two-variable scenarios. The paper aims to provide a comprehensive understanding of the techniques used, including double integrals and iterated integrals, to evaluate the volume of these solids. By examining various examples and applications, readers will gain insights into how to apply these methods to find volumes of diverse shapes and objects. Additionally, this research highlights the practical significance of calculating volumes in various fields, such as engineering, physics, and material science. By venturing beyond 2D and exploring volume calculations in two-variable situations, learners can enhance their mathematical proficiency and apply these concepts to analyze and model real-world situations.

Keywords: Volumes of solids, two-variable functions, multivariable calculus, double integrals, iterated integrals, mathematical analysis, applications, engineering, physics, material science, problem-solving.

76. Title: Cracking the Code: Unraveling the Method of Undetermined Coefficients

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Abstract: This research paper delves into the powerful method of undetermined coefficients, a valuable technique in solving linear non-homogeneous ordinary differential equations (ODEs). The method of undetermined coefficients allows for the determination of particular solutions to ODEs with non-homogeneous terms. The study aims to provide a comprehensive understanding of this method and its application in solving various types of ODEs, including second-order ODEs with constant coefficients and higher-order ODEs. By examining various examples and applications, readers will gain insights into how to unravel the code of undetermined coefficients and find particular solutions to complex ODEs..

Keywords: Method of undetermined coefficients, ordinary differential equations, linear non-homogeneous ODEs, particular solutions, second-order ODEs, constant coefficients, mathematical analysis, applications, physics, engineering, economics, problem-solving.

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77.Title: Nonlinear Optics: Harnessing Light's Potential for Signal Processing

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Abstract: Nonlinear optics has emerged as a powerful and versatile field of study, offering unique opportunities for signal processing applications. This paper delves into the principles and techniques of nonlinear optics, where the interaction of intense light with matter results in non-linear responses. We explore the underlying mechanisms, including second-harmonic generation, sum-frequency generation, and four-wave mixing, that enable signal manipulation and frequency conversion. Through a comprehensive review of recent research and advancements, we showcase the potential of nonlinear optics in various signal processing tasks, such as optical frequency conversion, wavelength conversion, and ultrafast pulse generation.

Keywords: Nonlinear optics, signal processing, second-harmonic generation, sum-frequency generation, four-wave mixing, frequency conversion, wavelength conversion.

78.Title: Crystal Growth in Extreme Conditions: High Pressure and Magnetic Fields

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Abstract: Crystal growth under extreme conditions, such as high pressure and magnetic fields, offers unique opportunities to explore novel materials and uncover hidden physical phenomena. This paper delves into the fascinating world of crystal growth in extreme environments, where external factors exert significant influence on the nucleation and growth processes. We examine the impact of high pressure on crystalline structures and properties, including the formation of new phases and the enhancement of material performance. Additionally, we explore the influence of magnetic fields on crystal growth, particularly in magnetic materials and their potential applications in spintronics and magneto-optics. Through a comprehensive review of experimental techniques and theoretical models, we highlight the significance of crystal growth in extreme conditions in advancing fundamental research and the development of cutting-edge technologies.

Keywords: Crystal growth, extreme conditions, high pressure, magnetic fields, nucleation, crystalline structures, material properties, new phases, material performance, magnetic materials, spintronics, magneto-optics, experimental techniques, theoretical models, fundamental research, cutting-edge technologies.

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79. Title: Thermal Resistance and Heat Dissipation in Electronic Devices

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Abstract: Thermal resistance and heat dissipation are critical factors influencing the performance and reliability of electronic devices. As technology advances and devices become more compact and powerful, managing heat generated during operation becomes increasingly challenging. This study focuses on the investigation of thermal resistance mechanisms in electronic devices and explores strategies for efficient heat dissipation. Theoretical models and computational simulations are employed to analyze heat transfer processes within the devices, taking into account material properties, device geometry, and boundary conditions. Moreover, experimental techniques, including infrared thermography and thermal impedance measurements, are used to validate the theoretical findings.

Keywords: Thermal resistance, Heat dissipation, Electronic devices, Heat transfer, Thermal management, Computational simulations, Infrared thermography, Thermal impedance, Cooling solutions, Reliability, High-performance electronics.

80. Title: Heat Conduction in Anisotropic Materials: Modeling and Experimental Analysis

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Abstract: Heat conduction in anisotropic materials is a crucial phenomenon with wide-ranging implications in various fields of science and engineering. Anisotropic materials exhibit different thermal conductivities along different crystallographic directions, leading to complex heat transfer behaviors. This study presents a comprehensive investigation of heat conduction in anisotropic materials through both modeling and experimental analysis. Theoretical models are developed to describe the anisotropic thermal conductivity tensor, taking into account the crystal lattice symmetry and phonon scattering mechanisms. These models are then compared with experimental data obtained from carefully designed experiments. The results shed light on the fundamental understanding of heat conduction in anisotropic materials, paving the way for optimizing heat management in various technological applications.

Keywords: Anisotropic materials, Heat conduction, Thermal conductivity tensor, Phonon scattering, Crystal lattice symmetry, Heat transfer modeling, Experimental analysis, Heat management, Technological applications.

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81. Title: Understanding Domain Wall Motion in Ferromagnetic Nanowires

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Abstract: The motion of domain walls in ferromagnetic nanowires is a key phenomenon that holds significant promise for advancing spintronics and magnetic memory devices. This study aims to provide a comprehensive understanding of domain wall motion in ferromagnetic nanowires through a combination of theoretical analysis and experimental investigations. Theoretical models are developed to describe the dynamics of domain walls, taking into account factors such as magnetostatic interactions, anisotropy effects, and spin-transfer torques. Additionally, experimental techniques, including magnetic force microscopy and time-resolved magneto-optical Kerr microscopy, are employed to visualize and measure domain wall motion at the nanoscale and optimizing nanowire-based spintronic devices.

Keywords: Ferromagnetic nanowires, Domain wall motion, Spintronics, Magnetic memory devices, Magnetostatic interactions, Anisotropy effects, Spin-transfer torque, Magnetic force microscopy, Magneto-optical Kerr microscopy, Nanoscale magnetism.

82. Title: Capacitance: Fundamentals, Applications, and Emerging Technologies

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Abstract: Capacitance is a fundamental electrical property that plays a pivotal role in a wide range of electronic and electrochemical systems. This study delves into the essential principles governing capacitance, exploring the underlying physics and mathematical formulations. It examines the behavior of capacitors in both static and dynamic regimes and investigates various factors affecting their performance, such as dielectric materials, electrode structures, and geometric configurations. Moreover, the research highlights diverse applications of capacitance, including energy storage devices, sensors, and electronic components. Furthermore, the study explores emerging technologies and novel materials that promise to revolutionize capacitance-based systems and devices

Keywords: Capacitance, Capacitors, Electrical properties, Dielectric materials, Electrode structures, Energy storage, Sensors, Electronic components, Emerging technologies, Electrochemical systems, Electrical engineering

83.Title: Microbial Water Purification Systems

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Abstract: Microbial Water Purification Systems play a pivotal role in addressing global challenges of water scarcity and pollution. This abstract provides an overview of the significance of using microbial-based processes for water purification. It highlights the diverse roles that microorganisms, such as bacteria, fungi, and algae, play in removing contaminants, organic matter, and pathogens from water sources. The abstract explores different microbial water treatment methods, including biofiltration, bioremediation, and bioflocculation, and their potential for sustainable and eco-friendly water purification. It also discusses the importance of considering factors like microbial community dynamics, environmental conditions, and system optimization to enhance the performance and efficiency of microbial water purification systems.

Keywords: Microbial Water Purification, Biofiltration, Bioremediation, Bioflocculation, Microorganisms in Water Treatment, Water Scarcity, Water Pollution, Pathogen Removal, Microbial Community Dynamics, Sustainable Water Treatment, Eco-friendly Purification, Environmental Conditions, System Optimization, Water Quality,Access to Clean Water

84. Title: Green Chemistry And Engineering: Toward A Sustainable Future

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Abstract: The "Green Chemistry and Engineering: Toward a Sustainable Future" abstract highlights the significance of integrating green chemistry principles and engineering practices to address environmental challenges and foster a sustainable future. The abstract outlines the key themes covered in the book, emphasizing the importance of designing chemical processes that minimize waste, reduce hazardous substances, and conserve energy and resources. It also discusses the role of innovative engineering techniques in supporting green chemistry initiatives. The abstract concludes with a call to action, urging researchers, engineers, and policymakers to collaborate in promoting sustainable practices in the chemical industry.

Keywords: Green Chemistry, Green Engineering, Sustainable Development, Environmental Impact, Pollution Prevention, Renewable Resources, Atom Economy, Energy Efficiency
Eco-friendly Synthesis, Design for Environment, Life Cycle Assessment, Process Intensification, Green Solvents, Catalysis, Waste Minimization

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85. Title: Biodegradable Polymers: Applications And Challenges

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Abstract: The abstract for "Biodegradable Polymers: Applications and Challenges" provides an overview of the increasing importance of biodegradable polymers as a sustainable alternative to traditional plastics. It highlights the urgent need to address environmental concerns related to plastic waste and explores the potential of biodegradable polymers to mitigate these issues. The abstract discusses the various applications of biodegradable polymers in different fields, including packaging, agriculture, medicine, and more. It also addresses the challenges associated with their development, such as cost-effectiveness, mechanical properties, and scalability. Additionally, the abstract emphasizes the importance of considering the environmental impact and biodegradability of these materials to ensure their efficacy in reducing plastic pollution.

Keywords: Biodegradable Polymers, Sustainable Materials, Plastic Waste, Environmental Concerns, Eco-friendly Alternatives, Biopolymers, Packaging Applications, Agricultural, Applications, Biomedical Applications, Mechanical Properties, Cost-effectiveness, Scalability, Environmental Impact, Biodegradability, Sustainability

86. Title: Nanofabrication Techniques and Nanodevices

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Abstract: The abstract for "Nanofabrication Techniques and Nanodevices" provides an overview of the critical role nanofabrication plays in shaping the development of nanodevices with groundbreaking applications. It highlights the significance of nanotechnology in creating structures and devices at the nanoscale, where unique properties and functionalities emerge. The abstract delves into various nanofabrication techniques, such as lithography, self-assembly, and nanomaterial synthesis, exploring their principles and applications. It discusses the diverse range of nanodevices that have emerged as a result of these fabrication methods, including nanosensors, nanoelectronics, nanophotonics, and nanomedicine devices.

Keywords: Nanofabrication, Nanodevices, Nanotechnology, Lithography, Self-assembly, Nanomaterials, Nanosensors, Nanoelectronics, Nanophotonics, Nanomedicine, Atomic-level Engineering, Scalability, Nanofabrication.

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87. Titile: Study and Analysis of Single Phase 13-Level Inverter Switching Pulses by interfacing Arduino

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Abstract: Inverters are nowadays very much in demand due to their serviceability. Based on the area of application there are various types of inverters available among them Cascade H-bridge multilevel inverter is very useful in every industrial applications, power system and home appliance. There are numerous limitations of conventional two level inverter like presence of harmonics and high rate of change of voltage that is caused in output. The elimination of presence of harmonics in the inverter output involves various techniques. Cascade connection of H bridges is one of the very efficient ways to eliminate the presence of Harmonics and high change in the output voltage. The cascade connection of H bridges provides very less or negligible change in voltage between two levels that is ultimately solution for two level inverter. In this project we are studying Cascade H bridge multilevel inverter where due to presence of multiple DC source and large number of switches change in output voltage from one level to other will be less. Cascade H-bridge inverter and their harmonics elimination using PSIM/MATLAB, the output of the cascade H bridge multilevel inverter will approach sine wave as the level increases.

Keywords:-DC Source, H Bridge Inverter, Harmonics, PSIM, Controlling Techniques.

88. Title: A Review of implementation of 5 level Inverter with reduced switches using Photovoltaic System

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Abstract: This paper deals with the multilevel inverter with reduced switch count fed by renewable energy sources. The inverter circuit is designed with the help of T-type topology. The inverter is fed from a solar panel which generates a dc output. MPPT technique is employed to get the required output from solar panel. The output of solar panel is passed to a dc-dc converter and then to inverter. Thirteen level output voltage waveform is produced using eight switches in inverter. LC filter is used to avoid harmonics. Space vector pulse width modulation technique is used to generate pulses for the switches used in inverter. The transistors used will be MOSFET in case of low power applications and IGBT in case of high power applications.

Keywords: IGBT, LC filter, MOSFET, MPPT Technique, MATLAB Simulink

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89. Title: Study of Simulation of 13 level Multi level Inverter using POD and SPWM

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Abstract: Multilevel inverter is usually utilized in high voltage and high-power applications because of their lower filtering requirement smaller dv/dt changes medium voltage. But, as the output voltage level increase, the number of using the semiconductor device is increased. The demerit of conventional MLIs is that it requires a greater number of components which in turn increase the complexity of gate pulse generation. Therefore, the cost of MLI will increase. Conventional MLI topologies are classified into DCMLI (Diode Clamped Multilevel Inverter), Flying Capacitor, Cascaded h-bridge MLI (CHBMLI). In this paper we have used hybrid cascaded h-bridge MLI. It has more advantages over other topologies. It is proposed with a minimum number of switching devices like diodes, dc source etc. cost and space required is considerably reduced with increase in no of steps in output voltage.

Keywords: Diode Clamped Multilevel Inverter, Filter Capacitor, SPWM Technique.

90. Title: Advancements in Power Electronics for Embedded Systems: A Comprehensive Review

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Abstract: Power electronics plays a vital role in modern embedded systems, enabling efficient and controlled power management for a wide range of applications. This paper presents a comprehensive review of the recent advancements in power electronics, with a specific focus on its integration within embedded systems. The review encompasses various aspects, including power converters, voltage regulation techniques, energy storage solutions, and control methodologies. Furthermore, the paper discusses the challenges and opportunities in implementing power electronics in embedded systems, considering factors such as size, efficiency, and reliability.

Keywords: Power Electronics, Embedded Systems, Power Converters, Voltage Regulation, Energy Storage, Control Methodologies, Efficiency, Reliability, Renewable Energy Integration, Electric Vehicles.

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91.Title: A Review and Study of Hybrid Energy Generation Systems

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Abstract: The depleting conventional energy sources and world population growth at a rapid rate predict the severe global energy crisis in near future. As an alternative, the world has started considering renewable energy sources as they are ubiquitous, environmentally affable and freely available. One of the fastest expanding renewable energy sources is wind energy. The wind energy systems, while operating alone, may not be practical for fulfilling the electric load demands owing to the low wind speeds and high unpredictability. A wind-hybrid energy system comprises of the wind energy system combined with one or more other renewable energy systems and a suitable backup system in the form of batteries bank or diesel generator. Combined operation enhances the reliability and compensates for the unpredictability. This paper presents a detailed study dealing with the different wind-hybrid energy systems in order to yield a useful reference for the concerned researchers.

Keywords: Conventional Sources, Hybrid Energy Generation System, Reliability.

92.Title: Investigation of conversion of Single Phase to Three Phase Ac System using Parallel Controlled Rectifiers using PWM Techniques

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Abstract: This paper is a single phase to three phase AC drive system composed of two parallel single phase rectifiers, three phase inverter, and an induction motor. The main advantage of the paper is to reduce the rectifier switch currents, the harmonic distortion at the converter input side, improvements on the fault tolerance characteristics and an induction Motor run at any loaded conditions. Even with increase in the number of switches, the total energy loss of the system lower than the conventional system. The model of the system is derived and it shown that the reduction of circulating current is an improvement objective of the system design. It required output voltage for inverter using PWM technique. This paper is a single phase to three phase drive system composed of two parallel single phase rectifiers using MAT LAB Simulink model.

Keywords: Single Phase System, Three Phase System AC System, PWM Technique, MATLAB Simulink,

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93. Title: Electric Vehicle Hub Motors: Advancements, Challenges and Future Prospects

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Abstract: Electric Vehicle (EV) hub motors have gained significant attention in recent years due to their potential to revolutionize the automotive industry. Unlike traditional internal combustion engine vehicles, electric vehicles utilize electric motors located within the wheel hubs, providing numerous advantages such as enhanced vehicle efficiency, simplified drive train design, and improved handling. This paper presents a comprehensive review of the advancements, challenges, and future prospects associated with electric vehicle hub motors. The study explores various aspects, including the different types of hub motors, their working principles, and their impact on vehicle dynamics and performance.

Keywords: Electric Vehicle, EV, Hub Motors, In-Wheel Motors, Advancements, Challenges, Vehicle Dynamics, Regenerative Braking, Thermal Management, Autonomous Vehicles, Urban Mobility, Sustainability, Drivetrain Design.

94. Title: A Review Report of thirteen level Inverter based Single Phase to Three Phase Converter

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Abstract: – This paper proposes a five level inverter based single phase supply to three phase supply conversion system. This converter is able to run any three phase equipment from a single phase supply. Lower distortion of the output ensure about better performance and lower ripple in equipments output. Using capacitor based voltage divider system in inverter reduces the number of switches and improves the system efficiency. This converter allows to run three phase equipment at the same frequency of single phase.

Keywords: Three Phase Converter, Voltage Divider System, Multi Level Inverter.

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95.Title: Single Phase Inverter based Harmonic Analyzer using MATLAB Simulink

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Abstract: This paper focus on modelling and simulation of single phase inverter as a frequency changer modulated by Pulse Width Modulation (PWM). An inverter is a circuit that converts DC sources to AC sources. Pulse Width Modulations a technique that use as a way to decrease total harmonic distortion in inverter circuit. The model is implemented using MATLAB/Simulink software with the SimPower System Block Set based on computer simulation. Computer simulation plays an important role in the design, analysis, and evaluation of power electronic converter and their controller. MATLAB is an effective tool to analyze a PWM inverter. Advantages of using MATLAB are the following: Faster response, availability of various simulation tools and functional blocks and the absence of convergence problems. Safe-commutation strategy want be implemented is to solve switching Transients.

Keywords: Harmonic Analyser, Single Phase Inverter, IGBT, MATLAB Simulink, PWM Modulation Techniques.

96.Title: A Study of Harmonic Characteristics in three phase Sinusoidal Pulse Width Modulation Inverter

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Abstract: Through using dual Fourier transform quantitative analysis and harmonic loss calculation on the output voltage of three phase voltage-Sinusoidal Pulse Width Modulation (SPWM) inverter, a valid harmonic inhibition scheme is presented. Carrier frequency is reasonably selected to eliminate low times harmonics, harmonics of carrier frequency times and triple frequency sideband. Analysis of fast Fourier transform is achieved in MATLAB. Simulation results show that harmonics are effectively inhibited, output voltage waveform is improved and voltage distortion factor is decreased level.

Keywords: SPWM Inverter, Harmonics, MATLAB Simulink, Fourier Transform.

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97. Title: Comparative Analysis and Review of Speed control of DC Machines using Controllers

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Abstract: Electrical machines like DC motors, brushless DC motors, permanent magnet DC motors are being controlled with power electronics converters. The control has become precise with invention of Micro Controller and power devices like IGBT, Power MOSFET. In this paper the attempt is made to simulate a speed control of separately excited DC motor with PID and fuzzy controller. The aim of this paper is providing efficient method to control speed of DC motor using analog Controller. With the availability of MATLAB/SIMULINK, Fuzzy Controller for comprehensive study of modeling analysis and speed control design methods has been demonstrated.

Keywords: DC Machines, Controllers, IGBT, MOSFET, MATLAB Simulink.

98. Title: MATLAB Simulation for Speed Control of Induction motor drive using v/f Control Method

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Abstract: As the subject of the paper, the speed control of induction motor fed by a three phase voltage source inverter has been done using PWM. To control the peak dc link voltage of the VSI, a PI controller was designed. This model uses the bode diagram. Based on the required dynamic specifications, the parameters of the PI controller were calculated. The speed control method adopted was compared with the adjustable speed drives. The comparison was done to change the motor speed from 0 to the rated speed (Ns) with the rated load torque. MATLAB simulation of the proposed speed control method for 1HP induction motor was done to verify the performance of the proposed method.

Keywords: Induction Motor, Speed Control Techniques, V/F Control methods, VSI.

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99.Title: An Investigative Study on Speed Control of Separately Excited DC Motor using Fuzzy Neural Model based Controller

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Abstract: Conventional controllers are generally used to control the speed of the separately excited DC motors in various industrial applications. It is found to be simple and high effective if the load disturbances is small. So the drawback of Conventional controllers when high load has been applied to the DC motor. This paper presents the speed control of a separately excited dc motor using Fuzzy Neural Model Referance controller. The system has been implemented using Matlab/Simulink software. The simulation results show that presenting controller give good performance and high robustness in load disturbance.

Keywords: Speed Control, DC Motor, Fuzzy Controller, MATLAB Simulink.

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CONFERENCE PHOTOS

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