SSET - 2024
Hybrid Mode

B.V. V. Sangha's
Basaveshwar Engineering College, Bagalkote-587102, Karnataka, India

International Conference on

Sustainable Solutions

in

Engineering and Technology

(SSET-2024)

29th- 30th August 2024

International Conference on Sustainable Solutions

in

Engineering and Technology

(SSET-2024)

Convener: Dr. Veena S. Soraganvi

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List of Reviewers

Track 1: Sustainable Infrastructure and Earth Sciences
External Reviewers

Sl. No.	Name and Affiliation	Sl. No.	Name and Affiliation
01	Dr. Ramesh Nayaka Dept. of Civil and Infrastructure Engg. IIT Dharwad	02	Dr. Ashutosh Kumar Department of Civil Engg. IIT Mandi
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05	Dr. Parameshwar Department of Civil Engg., NIT, Srinagar	06	Dr. Vinod P S Clinical writer, Novortis India Hyderabad
07	Dr. Anil S Katti Walchand Institute of Science and Arts Solapur	08	Dr. Virupakshaiah D. B. M. Dept. of Microbiology Davanagere University, Davanagere
09	Dr. Renukaradhya SDM University Dharwad	10	Dr. K. V. Jayakumar Visiting Professor IIT, Dharwad
11	Dr. Harshad Parate MSR University of Applied Sciences Bangaluru		

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05	Dr. Adarsh Chatra Basaveshwar Engineering College, Bagalkote	06	Dr Gangadhar B. Megeri Basaveshwar Engineering College, Bagalkote
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09	Dr. Madhumala Y. Basaveshwar Engineering College, Bagalkote	10	Dr. Basavaraj Nainegali Basaveshwar Engineering College, Bagalkote
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External Reviewers

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05	Dr. Prakash Vadavadagi Basaveshwar Institute of Management Studies Bagalkote	06	Dr. B. M. Angadi BLDE College of Engineeirng & Tech., Vijaypur
07	Dr. PavanBenakatti Basaveshwar Institute of Management Studies Bagalkote	08	Dr. Prabhakar M. Bhovi KLE Technological University Hubballi
09	Dr. Vijay Tambrallimath Dayananda Sagar College of Engineering Bangalore		

Internal Reviewers

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05	Dr. Ramesh S. Naik Basaveshwar Engineering College, Bagalkote	06	Dr. V. V. Kuppast Basaveshwar Engineering College, Bagalkote
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09	Dr. Rashmi R. Hunnur Basaveshwar Engineering College, Bagalkote	10	Dr. A. N. Sonnad Basaveshwar Engineering College, Bagalkote

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External Reviewers

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21	Dr. S. G. Gollagi KLE College of Engg. & Tech. Chikodi	22	Dr. Ramesh S. Wadawadagi Nagarjuna College of Engg. & Tech. Bengaluru
23	Dr. Sanjeevakumar M. Hatture Nagarjuna College of Engg. & Tech. Bengaluru		

Internal Reviewers

Chairman's Message

It is my distinct honor and privilege to welcome you to the International Conference on Sustainable Solutions in Engineering and Technology, hosted by Basaveshwar Engineering College. This prestigious event brings together thought leaders, researchers, and practitioners from around the globe to explore innovative solutions that address the critical challenges of sustainability in engineering and technology.

Our Sangha is deeply committed to fostering an environment of academic excellence and innovation. We believe that the interdisciplinary exchange of knowledge and ideas at this conference will lead to meaningful collaborations and impactful solutions. The topics covered here, ranging from renewable energy to sustainable infrastructure, are crucial for building a resilient and sustainable world.

The themes and discussions of this conference are more pertinent than ever as we face the dual imperatives of advancing technology and preserving our environment. I am confident that the insights and solutions that emerge from this conference will make significant contributions to our shared mission of sustainability.

I extend my heartfelt thanks to all the keynote speakers and participants for making this event successful. I congratulate the organizers for their hard work and dedication.

Dr. Veeranna C. Charantimath
Chairman,
B. V. V. Sangha, Bagalkote

Secretary's Message

As we navigate the complexities of modern development, it is imperative that we integrate sustainable practices into every facet of our technological advancements. This conference provides a vital platform for researchers, practitioners, and innovators to share their insights, discoveries, and strategies for creating sustainable solutions that will shape our future.

At Basaveshwar Engineering College, we are deeply committed to fostering an environment of academic excellence and innovation. Our goal is to drive forward the boundaries of knowledge and practice in ways that are sustainable and beneficial for society as a whole. This conference is a testament to our dedication to these principles and our belief in the power of collaborative effort.

Shri. Mahesh Athani
Hon. Secretary
B. V. V. Sangha, Bagalkote

Technical Director's Message

I am particularly excited about the innovative solutions and cutting-edge research that will be presented during this conference. The intersection of engineering and sustainability presents unique challenges and opportunities, and it is through gatherings like this that we can share knowledge, inspire innovation, and collaborate on projects that will have a profound impact on our world.

Our commitment to sustainability is not just a goal but a guiding principle that influences all aspects of our work. This conference is an ideal platform to explore new ideas, methodologies, and technologies that can lead to sustainable growth and development. The diverse array of topics and the expertise of our participants promise a rich and enlightening experience for all.

I extend my heartfelt thanks to all the participants, keynote speakers, and organizing committee members for their dedication and hard work in making this conference a reality. Your contributions are invaluable to the success of this event and to the advancement of sustainable engineering and technology.

Dr. R. N. Herkal
Director of Technical Institutes
B. V. V. Sangha, Bagalkote

Principal's Message

Dear Collegues & Researchers

I feel happy to organize International Conference titled "Sustainable Solutions in Engineering and Technology" in Basaveshwar Engineering College, Bagalkote. This prestigious event, promises to be a landmark occasion, bringing together leading experts, researchers, and innovators from around the globe.

Focus of this conference will be on exploring cutting-edge approaches and technologies that address the pressing challenges of sustainability in engineering and technology. With a diverse array of topics ranging from renewable energy solutions and sustainable materials to smart infrastructure and green manufacturing, we aim to foster collaboration and inspire breakthrough ideas. Researchers from all disciplines gather here to explore the multidisciplinary approaches in designing and implementing systems that meet present needs without compromising the needs of future generations.

Our institution is honored to be the venue for this significant event and is committed to providing an enriching experience for all participants. We are confident that the key notes from experts, presentations from researchers will lead to valuable insights and partnerships that will drive forward the agenda of sustainable development.

I extend my deepest gratitude to Management for their continued support. I thank all the Keynote speakers, participants and orgnaising committee members for their continued support and engagement in this crucial event.

Dr. Veena Soraganvi
Principal
BEC, Bagalkote

Dean (R & D)'s Message

Dear Esteemed Colleagues and Participants,

It is with great pleasure and pride that I welcome you to the International Conference on Sustainable Solutions in Engineering and Technology. This conference is a testament to our collective commitment to advancing research and innovation in ways that are both technologically forward-thinking and environmentally sustainable.

Our institution has long been at the forefront of fostering research that addresses global challenges. This conference serves as a crucial platform for sharing knowledge, exchanging ideas, and forging collaborations that can lead to sustainable advancements. The contributions from our distinguished speakers and participants are essential for driving forward the agenda of sustainable development in engineering and technology.

I extend my deepest appreciation to all the researchers, practitioners, and organizers who have worked tirelessly to make this conference a success. Your dedication and expertise is the cornerstone of this event, and your contributions are instrumental in shaping a sustainable future.

Let us seize this opportunity to collaborate, innovate, and inspire one another as we work towards sustainable solutions that will benefit not only our generation but those to come.

Dr. Mahabaleshwar S. K.
Dean (R & D) and ICT
BEC, Bagalkote

CONTENT

Track 1:

Sustainable Infrastructure and Earth Sciences

1. A Study on Geotechnical and Agricultural Properties of Sediment Deposited in TB Dam

Srinidhi Patwari, Mounesh

Student, Civil Engineering Department
Ballari Institute of Technology & Management Ballari, India.

Ravichandra H.

Assistant Professor,
Civil Engineering Department,
Ballari Institute of Technology & Management, Ballari, India.

Dr. Adarsh S. Chatra

Associate Professor,
Civil Engineering Department,
Basaveshwar Engineering college, Bagalkot, India.

Abstract:

This study investigates the geotechnical and agricultural properties of sediment deposited in the Tungabhadra Dam basin. Comprehensive sampling and laboratory analysis were conducted to determine grain size distribution, Atterberg limits, specific gravity, compaction characteristics, and shear strength parameters of the sediments. Additionally, the sediment's nutrient content, pH, organic matter, and cation exchange capacity were evaluated to assess its suitability for agricultural use. Results indicated a predominance of fine-grained particles, with significant variations in plasticity and shear strength across different sediment layers. The sediments exhibited low to moderate plasticity, with liquid limits ranging from 30% to 50%. Shear strength tests revealed reduced stability under saturated conditions. The sediments also exhibited favorable nutrient content and organic matter levels, suggesting potential for agricultural application. The sediment deposited in the Tungabhadra Dam basin can be repurposed for various construction activities, including highway construction and brick manufacturing.

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Keywords:

MDD, OMC, CI, CBR, UCS

2. Application of Trenchless Technology in Urban Areas

Gouri Ajay Mhetar

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Avinash Angadi

Assistant Professor, Department of Civil Engineering,
Walchand Institute of Technology, Solapur.

Dr. Adarsh S. Chatra

Associate Professor, Department of Civil Engineering,
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Miss. Sakshi Kore, Master Yash Arora

School of Architecture,
D. Y. Patil College of Engineering and Technology,
Kolhapur, India.

Abstract:

Trenchless technology is an innovative method for constructing, repairing, and maintaining subterranean infrastructure in cities. The present study delves into the diverse uses of trenchless techniques, highlighting its importance in mitigating surface disturbance, reducing project durations, and decreasing expenses. Important methods such pipe bursting, cured-in-place pipe (CIPP) lining, micro tunneling, and horizontal directional drilling (HDD) are covered in detail, along with their benefits and particular applications. Using case studies and performance analysis, the research illustrates the efficacy of trenchless technology in urban environments when conventional open-cut technologies are unfeasible or disruptive. The results highlight trenchless solutions' potential to promote sustainable urban infrastructure development and guarantee little environmental impact. The ideas in the paper's conclusion address incorporating trenchless technology into urban frameworks for planning and policy to meet the rising demand for sustainable and effective infrastructure management

Keywords:

trenchless technology, subterranean infrastructure, surface disturbance, sustainable development, infrastructure management.

3. Dairy industry Effluent treatment by removal of COD by Electrocoagulation method using Aluminum and Graphite Electrodes

Chandrakant S. Watawati

Research Scholar,
Civil Engineering Department,
Basaveshwar Engineeering College, Bagalkote
VTU, Belagavi
Bagalkote, India.

C. B. Shivayogimath

Professor, Civil Engineering Department
B.E.C., Bagalkote, India.
Assistant Professor, Department of Civil Engineering
Rural Engineering College, Hulkoti, Gadag, India
City, Satate, Country.

Abstract:

The present research work focuses on the dairy effluent treatment by adopting the electrocoagulation method by using Graphite and Aluminum electrodes. The effect of operational parameters such as pH, applied voltage and electrolysis time were studied extensively at optimum conditions. The experiment was conducted in batch process and process variables such as removal efficiency of COD. The overall removal efficiency is 68.1% at optimum operating conditions (40 min, 20V and pH 7) was obtained. It was found in the experiment that the optimum parameters the energy consumption was about0.00701 kwh/kg COD.

Keywords:

Dairy wastewater, Aluminum, Graphite, COD, Electrocoagulation

4. Delineation of Ground Water Recharge Zones in Hirehalla Sub Watershed Using Geographical Information Systems

Gururaj Bandihal

Assistant Professor, Department of Civil Engineering,
Basaveshwar Engineering College, Bagalkote, India.

Veena S. Soraganvi

Principal & Professor,
Department of Civil Engineering Bagalkote.

Abstract:

Ground water recharge is useful for improvement of ground water augmentation. This is necessary in the regions where ground water storage or exploration is at critical level, wide variations or uncertainty in rainfall and the least availability of surface water resources. For ground water recharge, artificially, to be done, suitable recharge zones are to be identified in the study area or in the region of interest, followed by suitable recharge structure construction in the identified zones. Further, here should be a means for quantification of recharge of ground water artificially. Conventional methods to identify favorable zones for ground water recharge, are costlier, have limited applicability and consume more time, as geomorphology, geology, water resources availability, slope aspects of the region are to be studied extensively and spatially. Further, spatial comparison is to be made, to analyze the ground water recharge variation trend. Hence, in such cases, GIS and Remote sensing techniques can be used to find spatial variability in recharge zones and to find favorable recharge zones.

Through remote sensing satellites images are available, other collateral data and Geomorphology layers are integrated in GIS. In this paper, an attempt is made to illustrate the use of GIS and RS for identification of favorable ground water recharge zones.

Keywords:

Remote Sensing, Geographical Information Systems (GIS), Ground water Recharge

5. Influence of Quarry Dust and Demolished Soil on Strength Properties Including Compressive Stress-Strain Behavior of Rammed Earth

Mahantesh M. Hanamasagar

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Bagalkote, India.

Aravind M. Pattanashetti

Former PG Student, Department of Civil Engineering,
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Bagalkote, India.

Abstract:

Rammed earth is monolithic structure formed by compacting the natural soil in progressive layers. It is widely used in the construction industry. Nowadays rammed earth wall construction is fashion to construct the load bearing walls, floors, sub-base material in roadways, airport runways, taxiways, foundations and earthen bund by using natural soil and cement. Cement is used to stabilize the rammed earth structure. In the present work natural soil is replaced partially by quarry dust and demolished soil to improve the properties compared to the specimen made by natural soil, also to utilize the quarry waste. Natural soil, quarry dust, demolished soil, cement and water are used as ingredients of stabilized rammed earth specimens. Effort is made to replace the natural soil partially by quarry dust and demolished soil to study the influence on strength properties through an experimental programme. Mechanical properties such as compressive strength, flexural strength, split tensile strength and stress-stain relationships are studied for chosen three densities both in dry and saturated specimens. It is observed that the mechanical properties for three densities (16, 17, 18 kN/m3) considered are improved for specimens prepared by using quarry dust and demolished soil.

Keywords:

natural soil; quarry dust; demolished soil.

6. Parametric Assessment of Soil Nailing on Deep Excavation

Roopa Kamadinni, Dr. P. G. Rakaraddi

Department of Civil Engineering,
Basaveshwara Engineering College,
Bagalkote, Karnataka, India.

Abstract:

Soil nail walls have proven particularly effective for applications such as roadway cut excavations, road widening under existing bridges, rehabilitation of existing retaining structures, and both temporary and permanent excavations in urban areas. Soil nailing is a soil stabilization technique which is used as a remedial measure in order to treat the unstable natural or artificial soil slopes this study investigates the effectiveness of soil nailing for stabilizing deep excavations under static loading using a parametric approach. Numerical models were developed in the finite element software PLAXIS 2D to analyze the factor of safety of deep excavation with soil nails. The research will evaluate the impact of various parameters on the stability of the excavation, including slope angle, nail length and number of nails. The expected outcomes include identifying optimal soil nailing configurations that maximize the factor of safety and minimize slope deformation. This research aims to provide valuable insights for engineers designing deep excavations with soil nail reinforcement.

Keywords:

Soil Nailing, Deep Excavation, Slope Stability, Parametric Analysis, Plaxis 2D.

7. Performance Analysis of Ultra-High-Performance Concrete Using Locally Available Materials

Nagaraj Chawadapur, Vijay Chickkadesai, Reshma M. Nadaf

Department of Civil Engineering,
Biluru Gurubasav Mahaswamiji Institute of Technology, Mudhol.

Shankar H. Sanni

Department of Civil Engineering,
Basaveshwar Engineering College, Bagalkot.

Abstract:

Ultra-High-Performance Concrete (UHPC) is a new age type of steel fiber reinforced concrete that has superior strength and durability properties. The use of local materials is a fundamental step to save materials and along with saving the energy and to reduce the construction cost of concrete. In this study, an effort is made to produce the Ultra-high-performance concrete by using the locally available material such as fly ash, silica fume, basalt, fine natural sand available locally. Results indicated a convincing 28-day compressive strength about 103.67 MPa and 96.92 MPa were achieved which is about 70.88% and 70.90% more than the normal concrete compression strength with replacement steel fibers resulted in the highest strength.

Keywords:

UHPC, Steel fibers, Silica fume, Compression and flexure strength

8. Performance of Low-Density Foamed Concrete (LDFC) Integrated with Industrial and Agricultural Nano Wastes for Sustainable Development

Prof. Vinodkrishna M. Savadi

Assistant Professor, Department of Civil Engg.,
Acharya Institute of Technology, Bangalore.

Dr. Santosh M. Murnal

Professor, Principal,
Amruta Institute of Engineering and Management Science, Bangalore.

Abstract:

This study examines the integration of industrial and agricultural Nano wastes into Low-Density Foamed Concrete (LDFC) to improve its mechanical properties and sustainability. LDFC is known for its lightweight and thermal insulation benefits, but its lower strength limits its application in construction. To overcome this, Nano-sized industrial by-products like fly ash and silica fume, along with agricultural residues such as rice husk ash, were incorporated into the LDFC matrix. The results demonstrated significant improvements across all evaluated properties, particularly with silica fume making the modified LDFC a more viable and eco-friendly option for construction. This study contributes to sustainable development by promoting the use of Nano waste materials, reducing environmental impact, and enhancing the performance of LDFC in various construction applications.

Keywords:

Sustainable concrete, fly ash, GGBS, silica fume, recycled concrete aggregate, plastic waste etc.

9. Wastewater Treatment and Sustainable Bio-Energy Generation Using Microbial Fuel Cell (MFC)

Shainaj L. Naykodi

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Department of Civil Engineering,
Basaveshwar Engineering College,
Bagalkote, Karnataka, India.

Dr. Jayalatha N. A., Dr. G. B. Megeri

Assistant Professor,
Department of Civil Engineering,
Basaveshwar Engineering College,
Bagalkote, Karnataka, India.

Abstract:

In this paper pilot scale Microbial Fuel Cell (MFC) with two compartments was constructed for the treatment of wastewater and bio-electricity generation. MFC contain two chambers; anode and cathode chamber, which contain carbon and graphite electrode respectively. Both the chambers of MFC were separated by Agar-NaCl salt bridge. Efficiency of performance of a microbial fuel cell (MFC) was optimized as a function of three main factors such as pH was varied from 8-4, Hydraulic Retention Time (HRT) varied from 1 to 5 days and oxygen concentration in range of 0.2 to 1 ml/min. The percentage removal in BOD and COD at 5-day retention it showed 71.16% and 72% respectively with generation of electricity of 140mV.

Keywords:

Microbial Fuel Cell (MFC), Wastewater treatment, Bio-electricity, Agar-NaCl salt bridge.

10. Sustainable Wastewater Management with Native Plant Reed Beds

Roopa

M. Tech student, Department of Civil Engineering,
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Bagalkote, Karnataka, India.

Dr. G. B. Megeri, Dr. Jayalatha N. A.

Associate Professor, Department of Civil Engineering,
Basaveshwar Engineering College,
Bagalkote, Karnataka, India.

Abstract:

This study investigated the use of constructed wetlands for efficient municipal wastewater treatment. Three wetland setups were tested: one with Canna indica, another with Flax lily, and a control without plants. The results demonstrated that Canna indica outperformed Flax lily and the control in removing various wastewater parameters. The optimum retention period of 9 days achieved significant reductions, including a remarkable 82.87% reduction in COD and 94.4% reduction in nitrogen for the Canna indica setup. Overall, this study highlights the effectiveness of vertical flow constructed wetlands with Canna indica for eco-friendly and sustainable municipal wastewater treatment.

Keywords:

Canna indica, Flax lily, Municipal Wastewater Treatment, Reed Bed System

11. Sustainable Waste Management Solutions for Bhagavati Village, Bagalkote

Veena S. Soraganvi

Professor, Department of Civil Engineering,
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Jayalatha N. A.

Asst. Professor, Department of Civil Engineering,
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Omprakash Gurudev Holi, Veereshgouda Halemani, Swaroopa, Veena Biradar

Former UG Student, Department of Civil Engineering,
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Abstract:

Environmental pollution is the major thing that contributes to the hazards for living organisms. It becomes ones' moral duty to conserve the environment and treat the pollutants and make it sustainable for the survival of living beings. The present study emphasizes on treatment of wastewater of a village named Bhagavati, in Bagalkot district, Village has a lake which is contaminated with high levels of blue-green algae and toxins which make it susceptible to harming the residents staying nearby. For treatment of the wastewater in that village, wetland has been constructed, in which the treatment of wastewater is done by phytoremediation, and contaminant removal is done by Chrysopogon zizanioides (Vetiver) and Azolla pinnata. It was also observed that the village had lack of solid waste disposal system. The solid wastes like wastes from cattle sheds, gardens, kitchens, plastic wastes etc. were dumped on the road side of the villages which were directly thrown without treatment. So solid waste management was designed for the village, vermicomposting technique proved to have great impact as it provides an economic solid waste storage, collection, transportation and disposal of waste without harming the atmosphere. The main motto of the work carried out was to use the natural resources in a sustainable way by reusing, recycling the resources which reduces the effect of waste on environment, health and many other aspects. Wastewater treatment through Azolla pinnata showed effective insights in 47 days which were, 50% reduction in BOD5, 43% reduction in COD, 38% reduction in nitrite and 45% reduction in phosphate concentration. Vetiver grass also showed good results in 40 days which were, 50% reduction in BOD5, 39% reduction in COD, 67% reduction in nitrite and 50% reduction in phosphate concentration.

Keywords:

Floating Wetlands, Wastewater treatment, Vetiver, Azolla, Solid Waste management, Vermicomposting.

12. Isolation And Evaluation of Antidiabetic Property of Punicalagin Extracted from Pomegranate Peel

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Abstract:

Diabetes mellitus (DM), commonly referred to as diabetes, is a metabolic disorder characterized by high blood glucose levels over a prolonged period. Diabetes level of 70-110mg/dL is considered as normal, 100-125mg/dL is considered as prediabetes and 126mh/dL or higher is considered as diabetes. Diabetes is mainly divided into 2-major types: type 1 and type 2. This is a chronic metabolic disorder which is a fast-growing global problem with huge social, health, and economic consequences. Pomegranate peel, derived from the processing of Punica granatum L. (pomegranate), has traditionally been considered agricultural waste. Recent studies have shown its potential as a rich source of bioactive compounds with diverse pharmacological effects. Pomegranate peel is a rich source of antioxidants, polyphenols, dietary fibers and vitamins which contribute remarkable bioactivity. Punicalagin, a polyphenol found majorly in Punica granatum have pharmacological activities including anticancer, antioxidant, hepatoprotective, antimicrobial, antivirus, neuroprotective, anti-inflammation, gastro protective antidiabetic and anti-hyperlipidemia. In this project, extraction of punicalagin has been carried out by three different methods, namely, soxhlet extraction, water extraction and cloud point extraction. The recovery percentage of punicalagin by various extraction methods is compared and the method without any drawback is further selected. analysis of punicalagin is done by Thin Layer Chromatography (TLC), High Performance Liquid Chromatography (HPLC). The determination of effectiveness of the sample as an antidiabetic agent is done by preclinical trials.

Keywords:

Punicalagin, Antidiabetic, Cloud Point Extraction, Pomogranate pod, Polyphenol activity.

13. Development of Bio-Derived Antimicrobial, Nanocomposite for Packaging

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Abstract:

In the present investigation focuses on the use of Zinc oxide (ZnO) in preparation of Nanocomposite film. ZnO is currently listed as a generally recognized as safe material by the Food and Drug Administration and is used as food additive. Since, there has been wide application of nanotechnology utilizing them as a antimicrobial agents. Accordingly in the current study the potential antibacterial activity against the gram negative bacteria such as E. Coli, film ZnO in a nanoscale has shown antimicrobial properties and potential applications in food preservation. To give the packaging material anti-microbial activity and enhance packaging qualities, ZnO nanoparticles have been added to polymeric matrix. The primary techniques for synthesizing ZnO nanoparticles, their key attributes and antibacterial action mechanisms, and the results of their integration into polymeric matrices are all covered in this paper. This effort is will open the new dimension of packaging applications.

Keywords:

Zinc Nanoparticles, nanotechnology, bioplastic, antimicrobial property, Polymeric blends.

14. Removal of Heavy Metals from Wastewater by Bioremediation Method using Microalgae

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Abstract:

Bioremediation is a method of using natural processes to clean up sites contaminated by toxic chemicals. The presence of these heavy Metals on the surface of water is due to anthropogenic activities. Chlorella vulgaris and many microalgae are of capable to synthesis peptides, metallothioneins & Phytochelating which can bind effectively to heavy metals and undergo biosorption. Wastewater collected from, Lake was tested for heavy metals and it was found that Lead was 0.58mg/l, Chromium of 0.12 mg/l, Cadmium of 0.04 mg/l, Iron of 0.15mg/l, Arsenic of 0.07 mg/l. Chlorella Vulgaris was grown & its growth was optimized. Based on the growth curve, the organism was inoculated into the wastewater and was analyzed in different intervals. The reduction began on 8th day of inoculation and by 21st day it was found that about 83% of lead, 66% of chromium, 25% of cadmium, 60% of Iron, and 71.42% of arsenic was reduced. This indicates that Chlorella vulgaris is found to be the best option for removal of heavy metals from wastewater by using biosorption.

Keywords:

Biosorption, Heavy metals, Chlorella vulgaris, Bioremediation and biosorbent.

15. NDWI Analysis for Monitoring Water Resources of Bagalkote City Planning Using Remote Sensing and GIS

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Abstract:

The application of the Normalized Difference Water Index (NDWI) in assessing water resources provides valuable insights into the spatiotemporal variations of water bodies. This study conducted an NDWI analysis for Bagalkote City Boundary with 4km Buffer zone over the years 1991, 2021, 2022, 2023 and 2024 revealing significant in water presence and distribution. The highest NDWI values, ranging from -0.254 to -0.498, indicated areas with a higher concentration of water, suggested regions with reduced water content or potential land cover changes. The consistency in NDWI patterns across the three years highlighted a stable spatial distribution of water bodies, despite minor annual variations. These findings have important implications for water resource management, disaster preparedness, and sustainable development, emphasizing the need for informed decision-making to safeguard water resources. Future research should explore the factors influencing NDWI variations and integrate NDWI analysis with other datasets for a comprehensive understanding of water dynamics.

Keywords:

NDWI, Water resources, Water scarcity and sustainable management.

16. Studies on Energy Efficient Design of Building for Warm and Humid Climate Zone in India

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Abstract:

This study investigates the use of red mud, a byproduct of bauxite processing, in cement mortar mixes to enhance thermal properties and address disposal challenges. By examining strength, thermal conductivity, specific heat, decrement factor, and time lag of mixes with varying red mud proportions, the research aims to improve building energy efficiency in hot, dry climates according to the Energy Conservation Building Code (ECBC). Results indicate red mud enhances mortar's thermal insulation, reducing cooling energy consumption and providing a sustainable solution for red mud utilization in construction.

Keywords:

Energy Efficiency, Building Design, Warm and Humid Climate, India, Structural Engineering, Energy Optimization.

17. *Swietenia mahagony* Seed Extract Coated Starch Based Biodegradable Plastic for Antimicrobial Food Packaging

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Abstract:

Biodegradable plastics (Bioplastic) with antimicrobial property has become new trend in packaging segment. In present market there has been limited availability biodegradable plastic with antimicrobial packaging, so there is huge potential in supply of such material. By keeping this scope in mind the current investigation was aimed to produce bioplastics using a simple and feasible casting method using starch, gelatine, agar, glycerol with varied concentrations. Subsequently the antimicrobial property, biodegradability, water and oil permeability were evaluated. The potential antimicrobial substance was extracted from Swietenia mahagoni and are found to be flavonoids which are responsible for imparting antimicrobial resistance property to the film. Further, the produced film was confirmed for its antimicrobial activity using plate assay method. Developed film showed resistance effect against airborne microbes. Then the film was also tested for biodegradability test through soil burial method which inferred that the film could be degraded in about 60 days. Collectively the data showed that the polymer film can be used as a prerequisite for development of bio plastics in food manufacturing industry especially packaged foods.

Keywords:

Bioplastics, airborne pathogens, food packaging, Swietenia mahagony, antimicrobial activity.

18. Mapping Potential Evapotranspiration using Optimal Empirical Techniques

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Abstract:

This study focuses on the estimation of spatial Potential Evapotranspiration (PET) in the Ghataprabha River Basin using various empirical methods, validated by the pan evaporation method. The Penman-Monteith method, known for its comprehensive approach, served as the standard for comparison. Among the five empirical methods evaluated—Hargreaves, Turc, Thornthwaite, Blaney-Criddle, and Kharrufa—the Hargreaves method demonstrated the closest correlation with the Penman-Monteith method, making it a practical alternative due to its minimal data requirements. Spatial Land Surface Temperature (LST) data, extracted from Landsat 8 satellite images, enabled the application of the Hargreaves method for spatial PET estimation. The study revealed higher potential evapotranspiration (PET) values over water surfaces, moderate values over well-irrigated agricultural lands, and lower values over dry surfaces, highlighting the influence of surface characteristics and moisture availability on ET rates. The pan evaporation method provided effective validation, aligning closely with the Penman-Monteith estimates. The integration of remote sensing data with empirical methods facilitated detailed and accurate mapping of ET patterns across the basin. These findings underscore the importance of selecting appropriate empirical methods tailored to regional climatic conditions and the value of remote sensing in enhancing ET estimation accuracy, crucial for effective water resource management and agricultural planning in the region.

Keywords:

Potential Evapotranspiration, Empirical equations, Spatial PET.

19. Machine Learning Approach to Predict the Malnutrition Status of Women

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Abstract:

The study uses machine learning techniques to address malnutrition among women and children, a prevalent concern in many regions. Malnutrition significantly impacts health, development, and mortality rates, necessitating accurate and efficient predictive models to identify at-risk individuals. The specific objective of the research is to develop and evaluate a machine learning-based approach that can reliably predict the malnutrition status of women and children, utilizing various socioeconomic, demographic, and health-related data. This study presents a comprehensive analysis of malnutrition among women by applying machine learning techniques to data from the Demographic and Health Surveys (DHS) Program. A total of 2,32,920 raw data samples were meticulously collected and cleaned, comprising approximately 1600 parameters. A thorough analysis identified 19 parameters as significant contributors to anemia among women. Utilizing the Random Forest Classifier Algorithm implemented via Python code, a machine learning model was developed and trained on 80% of the sample size (1,86,336 samples) for effective prediction and analysis. Subsequently, the model was thoroughly tested on the remaining 20% of the sample size (46,584 samples) using the Google Colab platform. The results indicated an anemia prediction accuracy of 72.95% for the test cases, demonstrating the efficacy of the machine learning model in predicting anemia among women. This study underscores the potential of machine learning techniques in identifying and addressing public health challenges, particularly in nutrition and women's health.

Keywords:

Malnutrition, DHS, Random Forest Classifier, Machine Learning, and Predictive Modeling.

20. Formulation of Herbal Cleanser for Fruits and Vegetables

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Abstract:

Fruits and vegetables are highly nutritious and forms as key food commodity in the human consumption ,they are highly perishable due to their low shelf life and contaminants, these food commodities with microbes and health hazardous chemicals such as pesticides ,hence it is very necessary to remove the pesticides and prevent the microbial contamination of fruits and vegetables without changing its nutritional value ,washing with the tap water is the mostly common practice of consumers to reduce microbial contamination of fruits and vegetables but tap water has limitation and less effect on killing microbes and also water contains chlorine thus our project aims to design effective herbal cleanser in order to reduce contamination from the various sources for food safety that is the prime concern of today for consumers.

Keywords:

herbal wash, sanitisers, microbial load, contaminants, fruits and vegetable cleanser.

21. Enhancement of Nutrients in Wheat *(Triticum aestivum)* Grass by Hydrophonic Technique

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Abstract:

Wheatgrass is an affordable and effective source of essential nutrients and medicinal benefits for a healthy, rejuvenated body. This research focused on two objectives. The first was to explore hydroponics, an innovative and highly successful soilless agricultural technology [17]. Wheatgrass is a nutritional powerhouse for humans. Hydroponically grown wheatgrass is ready for harvest in seven days, whereas conventionally grown wheatgrass takes 21 days to reach the same stage.[22]. Wheatgrass is grown hydroponically using nutrient water with an NPK ratio of 19:19:19 [2]. Wheatgrass is grown hydroponically using nutrient water with an NPK ratio of 19:19:19. A comparative study shows that hydroponically grown wheatgrass has 113.36% nutrients, compared to 109.2% for soil-grown wheatgrass. This makes the nutrient content of hydroponically grown wheatgrass 4.16% higher than that of soil-grown wheatgrass.[18]. Therefore, nutrient water provides a higher percentage of essential nutrients needed for wheatgrass growth compared to soil [3].

Keywords:

Wheat grass, Nutrient water, N P K 19:19:19, Hydroponic.

22. Green Synthesis of Copper Nanoparticles Using *Ficus carica*

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Abstract:

Nanotechnology has opened up novel dimensions, engineered for various applications in the field of biotechnology and medicine specifically for the drug delivery. Green synthesis of copper nanoparticles (CuNPs) is cost effective and non-toxic over synthetic methods which is estimated to be rich with bioactive components. Copper nanoparticles exhibit catalytic activity and antimicrobial activity. CuNPs are synthesized and optimized from Ficus carica leaf dried under microwave, distilled water was added to the crushed powder and kept for incubation and extract was filtered to get the CuNPs. The synthesized nanoparticles were characterized under ultraviolet-visible spectrometer and scanning electron microscope. the screening of nanoparticles resulted in the strong antimicrobial activity which has abundant application in biomedical and also defined the presence of phytochemicals.

Keywords:

Green synthesis, antimicrobial, phytochemicals, scanning electronic microscope.

23. Antimicrobial Analysis for Fabrics

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Abstract:

Antimicrobial textiles are fabrics designed to either kill microorganisms or prevent their growth. Antimicrobial textiles find applications across a wide range of areas, including household items, commercial products, air filters, food packaging, healthcare, hygiene, medical, sportswear, storage, ventilation, and water purification systems. There has been a growing public awareness and commercial interest in antimicrobial textiles in recent years. These textiles are generally made by incorporating antimicrobial agents into the textile fibers or applying them to the fiber surfaces. Antibiotics such as triclosan or silver-based compounds are applied to textiles to inhibit microbial growth, reducing odor and potential infections. These treatments are often used in medical uniforms, hospital linens, and sportswear. It is crucial that any antimicrobial treatment used in textiles is effective against microorganisms while also being safe for both consumers and the environment. Here the antimicrobial testing was done using different techniques with the six different textile samples. Although some cloth samples exhibited minimal antimicrobial activity with E. coli and tetracycline is used as reference to check the activity. Notably, cloth samples 4A, 4B, 4C, 6A, 23 PLKBT 2%, and 10KBBTR showed a significant 2mm to 4 mm inhibition zone. Clothes of 4mm inhibition are more effective as good antimicrobial property As the use of antimicrobial textiles increases, there is a pressing need to develop regulations and international testing standards to ensure safety.

Keywords:

MHA- Muller Hington Agar, PCA- plate Count Agar.

24. Statistical Optimization of Immobilization Process to Enhance the Lipase Activity

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Abstract:

Biodiesel produced through the enzymatic process, plays a crucial role in reducing carbon emissions and dependence on fossil fuels. This sustainable alternative promotes cleaner air quality, supports renewable energy sources, and contributes to a more environmentally friendly future. Immobilized enzymes were used as catalyst. To enhance the activity of lipase, optimization of immobilization plays crucial role. Optimization studies was performed by statistical methods such as RSM (Box-Behnken design). The variables considered for optimization are sodium alginate concentration (1-5%), calcium chloride concentration(50-250mM), and ratio of Sodium Alginate to Lipase (1:1-1:5). The results of the optimization revealed that the greater lipase activity was gained with a more level of sodium alginate (5%), a low concentration of calcium chloride(50mM), and ratio of sodium alginate to lipase(1:3). The implementation of the Box-Behnken design enabled the identification of the optimal conditions to maximize lipase activity. The project's outcomes demonstrated a significant improvement in lipase activity, with an increase from 6.5 U/ml to 9.8 U/ml. Moreover, the efficiency of immobilization was substantially enhanced, rising from 52% to 82%. These findings underscore the remarkable increase in immobilization efficiency which are crucial factors in enhancing biodiesel production attained through the statistical optimization of immobilization process. Further the produced immobilized lipase was used for biodiesel production and it was observed that the conversion efficiency was enhanced.

Keywords:

Immobilization, lipase, optimization, RSM.

25. Enhancement of Sustainability from Concept to Completion by Project Implementation Team: A Review of Green Residential Building Construction Project

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Abstract:

Residential buildings constitute a significant proportion of the building stocks in India and elsewhere. Various rating tools have been developed to foster green residential building construction project. Different stakeholders adopting these tools to showcase their efforts in sustainable habitat and development. This paper examines the role of project implementation team in enhancing sustainability in green building construction projects. To meet this, survey check list from the few certified residential buildings have been collected and critically analysed. Further, through a review of existing literature and case studies, the paper highlights the importance of regular site level briefing and understanding of green concepts from initial design to completion of the project, close co-ordination among the team members of the project, meticulously follow-up of method statements and schedules, and close supervision and monitoring in achieving sustainability goals. The findings suggest that a structured approach to sustainability implementation can significantly enhance the environmental, social, and economic sustainability outcome. It is concluded that the study provides a useful reference and inputs to the Owners, Contractors, Engineers and Policy makers for implementation of green building construction projects in the future.

Keywords:

Sustainability, green concepts, method statements and schedules, implementation team, structured approach.

26. MHD Casson Nanofluid with Non-uniform Heat Source/Sink and Viscous Dissipation Effects

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Abstract:

This study explores the magneto-hydrodynamic fluid flow and heat exchange of a Casson nano particles with a non-uniform heat source or sink and viscous dissipation. The concerned boundary layer equations are deformed into set of nonlinear differential equations using appropriate similarity transformations. The Runge-Kutta method combined with the shooting technique is used to obtain numerical results for velocity and temperature within the boundary region. The impacts of key parameters, including the Casson liquid parameter, Eckert number, magnetic parameter, Prandtl number, porosity parameter, non-uniform heat source or sink parameter, on the flow field are analyzed, with numerical results presented graphically. The findings indicate that increasing the Casson parameter decreases the velocity field while increasing the temperature profile.

Keywords:

Casson parameter, nanofluids, porous medium, viscous dissipation, magneto hydrodynamic, Non-uniform heat source/sink.

Track 2:

Electrical, Communication and Networking

27. Anti-Sinking Airbag and Indicating System for Vehicle during Flood

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Abstract:

Floods pose significant risks to vehicles, often leading to dangerous situations for occupants and complicating rescue operations. This paper introduces an innovative anti-sinking airbag and indicating system designed to enhance vehicle safety during floods. The proposed system automatically deploys airbags to buoy the vehicle when floodwater reaches critical levels, preventing it from submerging. Simultaneously, an integrated indicating system alerts occupants and emergency services about the vehicle's status and location, facilitating prompt rescue efforts. The anti-sinking airbag system is equipped with advanced sensors and deployment algorithms to ensure rapid and effective response during flooding. The indicating system utilizes communication protocols to provide real-time updates on the vehicle's condition, thereby improving the coordination of emergency services. This dual-function system not only enhances occupant safety but also contributes to more efficient and effective emergency responses during flood events. This paper details the design, functionality, and integration of the anti-sinking airbag and indicating system, highlighting its potential impact on vehicular safety standards. By addressing a critical gap in existing vehicle safety technologies, this research aims to pave the way for the development of more resilient transportation solutions capable of withstanding the challenges posed by severe flooding.

Keywords:

Anti-sinking airbag, Flood safety, Vehicle safety systems, Emergency response, Buoyancy, Sensor integration, Real-time communication, Automotive safety technology, Disaster management

28. Combined Effect of Noise Reduction and Multiband Frequency Compression for Improving Speech Perception in Monaural Hearing Aids on Source Localization

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Abstract:

People with sensorineural hearing loss have wider auditory filters. The wider auditory filters have relatively smooth spectrum representations. This induces spectral masking, which impairs hearing-impaired people's ability to understand speech. The speech becomes less understandable when there is background noise, too. Therefore, it is important to select the best hearing aid algorithms like frequency lowering, frequency transposition, and frequency compression to minimize the effects of spectral masking. In order to enhance speech perception, it is therefore imperative to use noise reduction techniques in conjunction with hearing aid algorithms, but typically, these parts are created and evaluated separately. Therefore, the goal of the current study is to evaluate the combined effect of multiband frequency compression and noise reduction techniques on sound source localization for improving speech perception in monaural hearing aids. In the present work, we have investigated the impact of this approach on source localization with a compression factor of 0.6. The listening tests conducted for 7 different azimuth angles (-90º, -60º, -30º, 0º, 30º, 60º, and 90º) on 6 listeners with normal hearing under various signal to noise ratio (SNR) situations and on 6 listeners with mild sensorineural hearing loss (SNHL) showed that there is no detrimental effect on localization.

Keywords:

Hearing aids, multi-band frequency compression, Noise reduction, Sensorineural hearing loss, Source localization.

29. Data Management in Edge Computing: Opportunities and Challenges

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Abstract:

In order to handle the enormous volumes of data produced by IoT and IIoT devices, edge computing has become an essential technological advancement. This review paper explores recent advancements in data management using edge computing, focusing on efficient data placement, retrieval, reduction mechanisms, privacy-preserving techniques, and energy-efficient scheduling. Additionally, the paper identifies existing gaps and challenges, offering insights into future research directions. Edge computing is a paradigm shift in data management, bringing computation and storage closer to the source. This article examines the introduction to edge computing, including its architecture, important advantages, problems, and real-world applications. The goal is to give a detailed overview of how edge computing can transform data management processes, improve performance, and overcome the constraints of standard cloud computing.

Keywords:

Edge computing, data management, data reduction, privacy-preserving, energy efficiency

30. Development and Performance Testing of Automatic Seed Sowing Agri Robot

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Abstract:

Agricultural development is one of the most powerful and vital sectors to end extreme poverty. It is an allied sector and also the major livelihood provider in the country. In this paper it is mainly focused on reducing the time taken for sowing the seeds and to minimize the work of a farmer with minimum time along with the technology that is more easily understood, implemented, and used by the farmers. Proposed model has a 4- 4-wheel robot system and an Arduino Uno board which will control entire system process. If the seed box is empty, then the ultrasonic sensor detects the level of the seed container and indicates its status on the LCD display. The seed sowing machine is developed to get at an affordable price. Also, the non-technical and unskilled farmer can also operate it very easily. The single-row seeding mechanism is very simple to use and the various adjustments are made with ease, which is maintenance-free. The system is powered with batteries, wheels are provided for the rotation and a dc motor is inbuilt with those wheels to carry out the seed sowing activity.

Keywords:

Agriculture, Agri-robot, Arduino Uno, Grafana, InfluxDBLCD Display, IRSensor, Sowing machine, Ultrasonic Sensor.

31. Edge Computing Based Smart Health Care System

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Abstract:

In the realm of emergency medical services, timely and accurate health data is crucial for ensuring the well-being of patients in transit to healthcare facilities. The proposed system integrates edge computing technologies to enable real-time data processing and analysis, facilitating swift decision - makingandim proved patient care. Our smart ambulance is equipped with various IoT sensors and medical devices that continuously monitor the patient's vital signs, transmitting critical data to health care providers instantly. This setup allows for early diagnosis and intervention, significantly improving patient outcomes. Additionally, the edgecomputingframeworkensuresminimallatencyindatatransmissionand processing, even in remote or bandwidth-limited areas. The proposed system's architecture, implementation details, and performance evaluation are thoroughly discussed, demonstratingitspotentialtorevolutionizeemergencymedicalservices. Our findings suggest that Edge Computing-based Smart Ambulances can play a crucial role in modernizing emergency healthcare, offering a promising solution to the challenges faced in urgent medical scenarios.

Keywords:

Smart Ambulance, Edge Computing, IoT Sensors

32. Integrating Block chain in EV Charging Systems for Secure and Efficient Infrastructure

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Abstract:

with the growing adoption of electric vehicles (EVs) and the pressing need for secure and efficient charging infrastructures, ensuring the security of communication protocols within EV charging management systems is crucial. This study applies Burrows–Abadi–Needham (BAN) Logic to analyse the security of a proposed protocol for EV charging management. The protocol facilitates mutual authentication between the EV, the charging station, and the backend management system, ensures that only authorized EVs can initiate charging sessions, and maintains the integrity and confidentiality of all exchanged messages. The BAN Logic analysis confirms the robustness and security of the protocol, highlighting its effectiveness in preventing common security threats such as replay attacks, impersonation, and unauthorized access. This formal verification underscores the importance of BAN Logic in enhancing the reliability and trustworthiness of EV charging infrastructures.

Keywords:

Electric Vehicles (EVs); EV Charging Management System; Burrows–Abadi–Needham Logic (BAN)

33. IoT Enabled Infant Incubator for Healthcare Centers

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Abstract:

Newborns are particularly vulnerable to rough environments and dust and extreme temperatures can pose life-threatening risks. To address these challenges, we've developed a baby incubator that simulates the temperature and environmental conditions of a mother's womb while also monitoring vital medical conditions such as heart rate, skin temperature, and internal temperature. In response, integrating Internet of Things (IoT) technology into hospital equipment, like this baby incubator, has become a priority. The goal of the paper is to provide an app that enables remote monitoring of a baby's condition, allowing doctors to stay informed and respond quickly if needed. One of the incubator's key features is its ability to maintain optimal humidity levels, preventing the baby's skin from losing too much moisture and becoming brittle or cracked. The incubator is also equipped with monitoring devices that track vital signs, such as temperature and heart rate, enabling healthcare providers to continuously assess the baby's health.

Keywords:

Internet of Things, Incubator, Health monitoring, Heartbeat.

34. Machine Learning Approaches for Data Storage in IoT: A Review

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Abstract:

The widespread adoption of the Internet of Things (IoT) has resulted in the production of vast quantities of data originating from many sources. Efficient classification and storage of this data are critical for deriving actionable insights and enabling real-time decision-making. An overview of data management in IoT is given in this review paper. It discusses data storage types including machine learning and deep learning approaches and addresses the issues of data storage. Additionally, it highlights how to address these challenges through data classification, anomaly detection, predictive maintenance, and enhancing the compression of data and de-duplication. By leveraging advanced storage architectures and machine learning techniques, effective, safe, and scalable IoT data storage systems can be developed to meet the growing demands of the IoT ecosystem.

Keywords:

IoT, data storage, machine learning, data classification.

35. Performance Analys is of Inter-satellite Optical Wireless Communication

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Abstract:

When it comes to data transmission technologies, laser frequency offers a significant advantage over other conventional means like radio wave sand microwaves. It is more suited for usage in bidirectional space communication with high-speed objects and communication channels due to its fast data rate, small antenna size for both the transmitter and receiver, and high through put. This work aims to provide a brief over view of the application of lasers in inter satellite communication systems and to compare several metrics, such as eye diagrams, BER (Bit Error Rates), Q-factors, etc., utilizing MIMO, SISO, SIMO, and MISO over a certain distance. We will offer a condensed comparative analysis and some recommendations for further study.

Keywords:

BER, SINR, MIMO, Q-factor, Modulator.

36. Review of Structural Health Monitoring Methods: A Machine Learning Approach

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Abstract:

The discipline of structural health monitoring (SHM) has benefited from a great deal of novel sensing and monitoring systems based on machine vision-based technologies during the last 20 years. Some of the technology's unique intrinsic benefits include immunity to electromagnetic interference, extended range, high accuracy, noncontact, nondestructive, and broad-spectrum, multi-target surveillance. Numerous techniques for structural condition inspection and structural dynamic assessment based on machine vision have been put forth. Measurements of the physical characteristics of the structure, such as displacement, strain/stress, rotation, vibration, fracture, and spalling, are also made in real-world settings. This review article's goal is to provide an overview of the fundamental ideas and real-world uses of the machine vision-based technology used in structural monitoring. It also aims to integrate the technology with other contemporary sensing techniques and address systematic error causes.

37. RFID based Smart Shopping Trolley

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Abstract:

The proposed smart shopping trolley system leverages RFID technology and IoT connectivity to streamline the shopping experience. With an Arduino board, RFID reader and Wi-Fi module, customers can easily navigate through stores, automatically tallying their purchases as they go. This innovative approach minimizes wait times at checkout, providing a seamless and efficient shopping experience. Additionally, the integration with a centralized database and website allows for easy access to purchase history and administrative oversight, enhancing convenience for both customers and retailers.

Keywords:

RFID, RFID Tags, Arduino, Wifi Module, Blynk app

38. Smart Home Automation using IoT

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Abstract:

The rapid advancement of Internet of Things (IoT) technology has revolutionized the concept of home automation, transforming traditional homes into intelligent, connected ecosystems. This paper presents an in-depth exploration of smart home automation utilizing IoT, focusing on the design, implementation, and potential applications. The system integrates various IoT devices, sensors, and actuators to monitor and control home environments efficiently. The effectiveness of the proposed smart home automation system is validated through experimental setups and real-world scenarios. Results demonstrate significant improvements in convenience, energy efficiency, and security compared to conventional home automation systems. This research provides a comprehensive framework for future developments in IoT-based smart home technologies, paving the way for more intelligent and responsive living environments.

Keywords:

Smart Home Automation, Internet of Things (IoT), Sensors, Actuators, Energy Efficiency, Security, Privacy, Cloud Services, Remote Monitoring.

39. Speech Intelligibility Enhancement based on Spectral Splitting Technique

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Abstract:

People with moderate sensorineural hearing loss (MSNHL) have difficulty in recognizing speech in loud environment because of masking. There is no medical treatment for this loss. By spectrally dividing the voice signal using a pair of time varying FIR comb filters (TVCF) for binaural hearing aid, the effect of frequency masking can be reduced. As a result, perception of voice signal is increased. Using a frequency sampling method TVCF of order 512 are designed. These filters are having 22 octave bands (one-third) varying from frequency 0 kHz to 11 kHz. Magnitude responses of these filters are complementary to one another which sweep along the frequency axis with time shift less than just noticeable difference (JND). This enhances gap identification capability while maintaining the advantages of the frequency splitting method. To evaluate effectiveness of frequency splitting scheme, the Modified Rhyme Test (MRT) is used for speech intelligibility test. This test is examined on bilateral MSNHL subjects. Three hundred monosyllabic CVC (Consonant Vowel Consonant) syllables, serve as the test signals, are utilized to evaluate the scheme. The findings show that in environments with higher levels of noise, people are better able to comprehend and interpret processed speech.

Keywords:

Masking, Time-varying FIR filter, Spectral splitting, MRT.

40. Survey on Health Monitoring System

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Abstract:

The burgeoning integration of IoT and wearable technologies has revolutionized healthcare, giving rise to a plethora of health monitoring systems. This survey comprehensively analyzes the current landscape of these systems, examining their architectures, sensor technologies, communication protocols, data management strategies, and security measures. By identifying common challenges, such as data privacy, energy efficiency, and real-time processing, this research underscores the need for innovative solutions. The survey also explores the potential of emerging technologies like AI and machine learning in enhancing health monitoring capabilities. Motivated by these findings, we embarked on a work to develop a "Health Monitoring System using IoT" that addresses specific identified gaps. This survey serves as a foundation for our project and guides future research towards more efficient, accurate, and user-centric health monitoring solutions.

Keywords:

IoT, LCD, EEG, ECG, AI&M.

41. Towards 6G: An Overview of Next Generation Communication

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Abstract:

Sixth generation (or 6G) cellular communication standards are a major improvement over the existing 5G networks. As we approach the dawn of this new era, 6G promises to bring about significant changes that will enhance connection and open up a plethora of creative applications in a variety of fields. The transition from 1G to 5G has already altered how we work, live, and communicate with one another. This platform will be enhanced by 6G, which will offer hitherto unheard-of capabilities. Through this paper, various research areas of 6G are discussed.

Keywords:

6G, IRS, AI & Machine learning, OTFS.

42. A Comprehensive Review of Resource Management Techniques in Edge Computing

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Abstract:

Edge computing is a transformative approach that brings computation and data storage closer to the data source, enhancing response times and saving bandwidth. This paper provides a comprehensive review of resource management techniques in edge computing, addressing the key challenges and presenting future directions for research. We discuss various methods for resource allocation, load balancing, scheduling, and optimization. The review also highlights the security aspects and potential solutions for efficient resource management in edge environments.

43. Applications of Machine Learning and Deep Learning in Farming: A Review

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Abstract:

India is largely an agriculture product producing country. Agriculture in India is facing many challenges like drought, flood, disease, pricing, yield and etc. Precision agriculture is one of the rapidly developing fields. To address current challenges in agriculture, Deep learning stands as a promising technology in precision farming, facilitating the advancement of sophisticated disease detection and categorization methods. Plant disease recognition by deep learning, eliminates the need for manual identification of disease features, rendering feature abstraction more objective and enhancing technological efficiency. This paper provides a comprehensive review of machine learning and deep learning techniques applied to detect and classify plant diseases. The paper discusses available datasets for crop and plant disease detection and abstraction, followed by a comparative investigation of various algorithms utilized in leaf disease detection.

Keywords:

Classification, Machine learning, Object detection, Deep learning, and Plant leaf disease detection.

44. Aggregation Based on Clustered Data (ABCD) with Edge Computing

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Abstract:

In the era of big data and the Internet of Things (IoT), efficient data processing is crucial. This paper explores the integration of cluster-based data aggregation with edge computing and machine learning to enhance data processing efficiency, reduce latency and improve decision-making in real-time applications. We present a comprehensive framework to discuss key benefits and challenges and illustrate the implementation with a case study in a smart city environment.

Keywords:

Data Aggregation, Clustered Data Edge Computing, Edge Devices

45. Challenges and Future Prospects of Thin Film Deposition Techniques: A Critical Review

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Abstract:

Thin film technology is widely utilized across multiple industries to enhance the mechanical, physical, and chemical properties of bulk materials. This paper provides an overview of the current status, challenges, and future potential of thin film deposition techniques. It delves into various thin film deposition processes, detailing their distinct characteristics, future prospects, and common applications - such as enhancing energy efficiency, wear resistance, and corrosion resistance. The primary focus is on physical and chemical vapor deposition techniques. Generally, thin films with minimal thickness are produced through physical vapor deposition (PVD) and chemical vapor deposition (CVD). While PVD has its limitations, it remains a valuable method and is often more advantageous than CVD for depositing thin film materials. The paper also explores notable similarities and differences between these specific methods, and categorizes sub-methods that share common principles.

Keywords:

Thin Film, deposition methods, evaporation, Sputtering.

46. Designing the Arduino Based Nutrition Feeding Hydroponic System

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Allamprabhu V. Kolaki
Asst. Prof. KLS VDIT, Haliyal.

Abstract:

Hydroponics, a modern farming technique that eliminates the need for soil, employs water enriched with nutrients to facilitate plant growth. This study focuses on developing an automated system for distributing water and nutrients to plants, equipped with sensors to monitor water levels and nutrient concentrations. The system includes a TDS sensor for measuring electrical conductivity, an Arduino UNO R3 for processing, and a proximity sensor for detecting water levels.

Keywords:

Hydroponics, TDS, Arduino UNO.

47. Multilingual Regional Speech Classification Using Recurrent Neural Networks

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Abstract:

This study addresses the classification of ten regional languages using Recurrent Neural Networks (RNNs) based on Mel-Frequency Cepstral Coefficients (MFCCs) extracted from audio recordings. The languages under consideration include Kannada, Hindi, Marathi, Telugu, Malayalam, Bengali, Gujarati, Punjabi, Tamil, and Urdu. Motivated by the need for robust multilingual speech recognition systems that can accommodate linguistic diversity, this research aims to explore the effectiveness of RNNs in handling diverse language datasets. Despite advances in speech recognition, there remains a research gap in the development of models that accurately classify a wide range of regional languages using limited training data. This study addresses this gap by leveraging deep learning techniques and extensive data preprocessing to enhance classification accuracy. The RNN architecture comprises two LSTM layers augmented with batch normalization and dropout layers for regularization. Experimental results demonstrate promising outcomes with a training accuracy of 73.00% and a test accuracy of 64.33%, showcasing the model's capability to distinguish between the diverse phonetic and linguistic features of the selected languages. Applications of this research include enhanced speech recognition systems for diverse linguistic communities, automated language identification in multilingual environments, and preservation of linguistic heritage through technology-driven approaches. This study underscores the potential of RNNs in advancing the field of multilingual speech processing and contributes valuable insights into addressing the challenges of language diversity in artificial intelligence applications.

Keywords:

Regional Languages, Recurrent Neural Networks (RNNs), Mel-Frequency Cepstral Coefficients (MFCCs), Speech Recognition and Multilingual Classification.

48. Contactless Care Systems: A Review

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Abstract:

Contactless care systems have gained significant attention in the healthcare industry due to their ability to monitor vital signs and detect abnormalities without physical contact. This paper aims to provide a thorough examination of the current landscape of contactless care systems, with a particular emphasis on three key areas: fall detection, breathing rate monitoring, and heart rate monitoring. The review delves into the various smart sensors and wireless technologies employed in these systems, such as cameras, radar, and motion detectors, and explores how they facilitate the continuous tracking of an individual's movement, breathing patterns, and heart rate without the need for wearable devices. The aging population and the increasing cost of healthcare have driven the need for advanced monitoring systems that can provide continuous, real-time data on an individual's health status. Wearable devices have emerged as a promising solution, as they can interact with the human body and monitor various physiological parameters. However, the adoption of wearable devices has been hindered by issues such as comfort, user compliance, and potential data privacy concerns [1][2].

49. Design and Modelling of Droop Control for Small Wind Turbine Generator in µGrid

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Abstract:

Energy management through control strategies plays a significant role for efficient operation of microgrid. Most of the control techniques concentrate on generation of gate signals to operate power electronics devices. Energy management and load sharing of various sources according to variable loads is done through power electronic devices. Also, renewable sources mainly small wind turbine generator (SWT) is always intermittent in nature and wind speed in some of the location is lesser. Further, efficient utilization of energy available from SWT is done from conventional control strategy. Droop technique in dc microgrid provides droop setting so power supplied from sources is proportional to total load. In this project mathematical modelling of droop control system for SWT in microgrid is implemented, including two sources and load using MATLAB/SIMULINK. To obtain linear droop relation between small wind turbine and varying the load reference current is modelled with respect to bus voltage. The droop control applying in microgrid system is more efficient and increases the reliability of the system.

Keywords:

Microgrid, droop control, Small Wind Turbine generator, battery, loads, MATLAB/ simulation.

50. LoRa based Smart Energy Meter for Theft Detection

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Abstract:

LoRa (Long Range) is a wireless communication technology designed for long-range, low-power, low-data-rate applications. It is commonly used in Internet of Things (IoT) devices due to its ability to communicate over distances of several kilometers while consuming minimal power. LoRa technology is ideal for creating efficient, low-power, and long-range communication networks, especially for IoT applications. It enables the deployment of a wide variety of smart applications, from smart cities to industrial monitoring, making it a key technology in the advancement of the IoT ecosystem. The growing need for efficient and secure energy management systems has led to the development of smart energy meters. This paper presents a novel LoRa-based smart energy meter designed to detect and prevent electricity theft. Utilizing the LoRa (Long Range) communication technology, the proposed system offers a reliable, long-range, and low-power solution for real-time monitoring of energy consumption and theft detection. The smart energy meter integrates a digital energy meter with a microcontroller and LoRa module, which transmits data to a central server. The server processes the data using advanced algorithms to identify irregular consumption patterns indicative of theft. This system enhances the traditional energy meter by providing continuous, wireless data transmission over long distances, making it suitable for deployment in both urban and rural areas. This paper presents a LoRa-based smart energy meter designed for theft detection and remote meter reading. The proposed LoRa-based smart energy meter offers significant benefits, including improved theft detection accuracy, reduced power consumption, and extended communication range. This makes it a cost-effective and scalable solution for energy providers seeking to enhance the security and efficiency of their power distribution networks. The implementation details, including the hardware setup, and software algorithms are discussed to provide a comprehensive overview of the system's functionality and performance.

Keywords:

LoRa, Smart Energy Meter, Electricity Theft Detection, Long-Range Communication, Low Power Consumption, Real-Time Monitoring, Energy Management, Anomaly Detection, Wireless Data Transmission.

51. UV-C Based Plate Sterilizer

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Abstract:

The aim of this paper is to reduce the transmission of sickness among the people through the unclean plates used in large gatherings, marriage functions, temple fairs, etc. In large gathering of people at fairs and marriages requires huge number of plates where cleaning becomes the big task. This may lead to retain some microorganisms on plates which causes infections with manual cleaning process. Due to the lack of cleaning, bacteria build up and cause the spread of sickness. This proposed model works as both dish washer and sterilizing unit which can be used in large gatherings.

Keywords:

Dish washer, sterilizer, UV-C band, COVID, Infection.

52. Development of PD-PWM Technique for 5-Level Cascaded H-Bridge Inverter using FPGA for SPV Systems

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Abstract:

In the recent years, multilevel inverters (MLI) are gaining importance in various industrial applications and distributed energy sources due to its good waveform quality and low switching stress for medium voltage to high power applications. Among different topologies of MLIs, Cascaded H Bridge (CHB) is more suitable converter for SPV system as it provides isolated DC input compared to other topologies. The conventional pulse width modulation (PWM) control techniques have been used to control the CHB inverter. However, these techniques are operated at higher switching frequency results in higher switching loss that leads in harmonic content into the output voltage. In view of this, the paper presents Phase Disposition Pulse Width Modulation (PD-PWM) technique to operate MLIs at fundamental frequency with low harmonic content and less switching losses employed for SPV based applications. The proposed model is implemented using Matlab/Simulink and FPGA Xilinx tool box. Further, the model is validated on hardware test bench consisting of IGBT based inverter connected through three phase uncontrolled rectifier and FPGA based controller. It is observed from simulation and experimental results that the total harmonic distortion content for voltage waveforms found to be 38.10% and 5.36 % respectively. Finally, it is inferred that filtering requirement for 5-level is less as compared to that of two level or three level inverters.

Keywords:

Multilevel inverter, PWM technique, cascaded H bride inverter, SPV systems, FPGA processor.

53. A Review of Various Attacks and Detection Methods in Internet of Medical Things (IoMT) Systems

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Abstract:

The Internet of Medical Things (IoMT) revolutionizes healthcare by connecting medical devices and enabling seamless data exchange. However, this connectivity introduces significant security risks. This review paper discusses various attacks targeting IoMT systems and the corresponding detection and correction methods leveraging Machine Learning (ML), Deep Learning (DL), Artificial Intelligence (AI), and Blockchain technologies. Recent advancements from 2022 to 2024 are emphasized, highlighting their contributions to enhancing the security and resilience of IoMT systems.

54. Hybrid SegAN Fuzzy–Unet and DKN Classification for Crop Field Change Detection using Satellite Images

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Engineering Institute Ichalkaranji, India.

Abstract:

Changes in land-cover detection are important landscape characteristics that affect ecosystem conditions and function. Cropland detection is commonly used to find the agricultural area with the help of satellite images. The proposed approach detects the crop field using temporal change detection and satellite images. The satellite image-based crop field change detection is performed using the proposed hybrid DL-based segmentation, and deep Kronecker network (DKN) based crop field change detection.

Keywords:

Deep Kronecker Network, crop, satellite images, segmentation, U-net.

55. IOT Based Pollution Monitoring and Controlling System

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Abstract:

Industrial pollution has become a major concern worldwide, and effective monitoring and controlling systems are needed to prevent environmental damage and protect human health. In this proposed system, the designing of an IoT based system for monitoring and controlling industrial pollution is carried out. The system consists of a network of sensors, a data acquisition unit, a cloud-based platform, and a user interface. The sensors are deployed at different locations in the industrial area to measure various pollutions such as air, water, and noise. The data acquisition unit collects the sensor data and sends it to the cloud-based platform for storage and analysis. The controlling unit is responsible for activating various controlling mechanisms that is intimation to Pollution Control Board (PCB) which is responsible to remove the power supply to the industry that is polluting based on the pollution levels. PCB re-enables the power only if a penalty is paid by polluting industry and once the power is re-enabled, the process/work of industry continues. The user interface that is Blynk IOT app provides a dashboard that displays the real-time data. The dashboard also allows users to configure the system, set threshold values, and generate reports. It can help industries to comply with environmental regulations, reduce pollution levels, and improve their sustainability.

Keywords:

Pollution, sensor, IoT, monitor, control.

56. Design and Implementation of Multi Prime Mover Coupled Novel Water Pump for Small Scale Irrigation Requirements

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Abstract:

The deficient in electricity and high diesel costs affects the pumping requirements of irrigation systems for small scale agriculture. Therefore using solar energy and other sustainable water pumping methods is a promising alternative to conventional electricity and diesel based pumping systems. This paper presents a hand held & pedal driven novel type water pump for irrigation system, which can also be operated by solar PV systems and AC electric supply mechanisms. The proposed model include solar panel, DC motor, hand operated driver & pedal operated driver and a novel pump mechanism. The proposed water lifting pump is coupled with 350 W, 36 V DC motor. This motor rating is selected for optimum water output for lower heads of 5-10 meters. Hand driven and pedalling activities by individuals can results in 20 litres per minute of water. Further, DC motor can be operated directly from solar panel is hot sunny days during bright sunshine hours. During lesser radiation conditions, pump can be operated via hand or pedal driven and by grid connected supply through rectifier circuits. The pumping mechanism is constructed using PVC pipe structure with water lifting structure along the pipe. The guy rope is located intact with lifting vanes and this is coupled to the shaft of the wheel connected to prime movers. The proposed model is tested with all the provision made for operation and the results are tabulated. The results revealed that the novel pump can be effectively employed for small scale agriculture. This will significantly saves the electricity & diesel dependency and also provides the sustainable solution for water pumping for small scale agriculture.

Keywords:

Water pump, Centrifugal pump, Pipe Networks, Solar Panels, DC Motor

Track 3:

Green Manufacturing, Technology and Management

57. An Empirical Investigation into User Preferences: A Comparative Analysis of Netflix and Amazon Prime OTT Platforms with Emphasis on User Familiarity and Preference

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Abstract:

Platforms like Netflix and Amazon Prime Video thrive in the highly competitive streaming market by meeting consumer preferences and satisfaction. and study presents a comparative analysis of user preferences for Netflix and Amazon Prime, focusing on e-service quality factors such as streaming quality, user interface, and pricing, rather than content. Data was collected from 150 respondents via an online survey and analyzed using SPSS and Excel, employing descriptive statistics, t-tests, and correlation tests. Findings reveal that both platforms enjoy high user satisfaction with minimal significant differences in preference levels. Amazon Prime shows a slight edge in user preference, likely due to its extensive content library and competitive pricing. The positive correlation between preferences for Netflix and Amazon Prime suggests that users value both services, highlighting the need for further investigation into the factors driving user choice. This study provides insights into the competitive dynamics of the OTT market and suggests potential strategies for leveraging the positive relationship between the two platforms.

Keywords:

Netflix, Amazon Prime Video, User Preferences, Streaming Services.

58. A Study on Impact of Micro Finance on Self Help Groups (SHG's)

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Basaveshwar Engineering College, Bagalkote.

Abstract:

Microfinance has emerged as a powerful tool for promoting financial inclusion and empowering marginalized communities, particularly women, through initiatives like Self Help Groups (SHG's). This paper explores the interconnections among microfinance, financial inclusion, SHG's, and women empowerment. It begins by defining microfinance as the provision of financial services to low-income individuals who lack access to traditional banking services. Financial inclusion a broader concept encompasses ensuring access to a range of financial services and products at affordable costs. Self Help Groups (SHG's) play a crucial role in microfinance by mobilizing individuals, predominantly women, into small community-based organizations that pool savings and provide access to credit. SHG's not only enhance financial literacy and entrepreneurship skills but also foster social empowerment through collective decision-making and mutual support networks. Women in particular benefit significantly from Micro Finance and SHG's as these initiatives enable them to generate income, gain economic independence, and contribute to household and community welfare. Moreover, access to financial services enhances women decision making power within their households and communities, leading to improved social status and gender equality. Despite the successes, challenges remain in scaling up microfinance programs sustainably and ensuring equitable access for all marginalized groups. Issues such as over indebtedness, high transaction costs, and regulatory constraints need addressing to maximize the potential of microfinance in promoting inclusive economic growth and poverty reduction. In short microfinance, driven by initiatives like SHG's, holds promise as a catalyst for financial inclusion and women's empowerment. By addressing barriers to access and ensuring sustainability, policymakers and stakeholders can leverage these tools to foster inclusive development and empower marginalized communities, ultimately contributing to broader social and economic advancement.

Keywords:

Micro Finance, Financial Inclusion, Self Help Groups, Women Empowerment.

59. Analyzing Critical Inventory Management Factors in Indian MSMEs using DEMATEL Technique

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Bagalkote.

Dr. Channappa M. Javalagi

IPE Department,
Basaveshwar Engineering College, Bagalkote.

Abstract:

Organizations must comprehend the connection between their supply chain management (SCM) system and their success criteria in order to survive in this competitive market. This study aims to analyze the supply chain management (SCM) of Indian MSME's situated in the border region of Karnataka and Maharashtra by identifying the critical inventory management factors that contribute to their performance enhancement and establishing their causal relationship. Factor analysis is applied to reduce down the variables from 20 to significant 10, which in turn summarized into five factors. The considered five factors are: Economy & Efficiency, Customer service optimization, Inventory Stabilization, Cost Reduction, Competitive ability. The DEMATEL (Decision Making Trial and Evaluation Laboratory) technique is used to quantify and visualize the interdependencies among these different inventory management factors, hence supporting decision-making by identifying cause-and-effect correlations among these factors. Analysis reveals that the factor, "Cost Reduction" is most important factor among all other criteria considered. By employing this technique, we seek to provide a comprehensive understanding of the interdependencies among factors considered and their impact on SCM performance. Ultimately, the study aims to contribute insights that can guide MSMEs in formulating effective Inventory Management strategies tailored to their unique operational constraints.

Keywords:

SCM, DEMATEL, MSME, Inventory management.

60. Comparative Analysis of Wear Performance of Ti6Al4V Alloy Produced through Additive Manufacturing and Conventional Casting with Post-Processing Approaches: A Review

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Abstract:

Ti6Al4V alloy has excellent strength-to-weight ratio, high temperature stability, and biocompatibility, which make it a viable option for the chemical, biomedical, automotive, and aerospace industries. Despite having several desirable qualities, the alloy's use is limited to sliding interfaces. Additive manufacturing (AM) technologies enable the fabrication of innovative structures with complex geometries not easily manufactured by traditional processes. Additive manufacturing Ti6Al4V alloys such as Selective Laser Melting (SLM) are considered for making some Ti6Al4V part for potential applications. In the present study, the wear resistance, hardness and microstructure of Ti6Al4V alloys fabricated using various routes were reviewed. The specifics of the unmodified, 3D and modified by post processing/ surface coating of Ti6Al4V alloy's tribological behavior under varied operating and environmental situations can serve as a starting point for upcoming studies intended to enhance its tribological characteristics. As a result, the current review is an attempt to compile the research done to assess the sliding wear behavior of Ti6Al4V at room and elevated temperatures in both lubricated and dry conditions.

Keywords:

Ti6Al4V alloy, Additive manufacturing, microstructure, Tribology.

61. Economic Volatility in the Wake of the Russia-Ukraine War: Analyzing Macro Economic Trends and Market Dynamics

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Abstract:

This study examines the multifaceted impacts of the Russia-Ukraine war on global economic indicators from February 2022 to June 2024. The primary objectives include analyzing the effect of the conflict on inflation rates across major economies, investigating the correlation between inflation and stock market indices, and assessing the war's influence on market volatility. Utilizing secondary data from journal articles and reputable sources, the research explores key variables such as food inflation, general inflation, GDP, interest rates, and market volatility. Findings reveal a substantial increase in food inflation and commodity prices during the early phase of the war, with a subsequent decline in food prices and a varying trend in global commodities. Inflation peaked in several major economies but showed signs of stabilization by mid-2024. The study also identifies an inverse relationship between inflation and stock market indices, indicating that rising inflation adversely impacts stock markets. Moreover, the analysis highlights a notable increase in market volatility coinciding with the onset of the conflict. The results underscore the interconnectedness of economic indicators and the significant influence of geopolitical events on global economic stability. These insights are essential for policymakers and investors to navigate the complexities of economic uncertainty and develop strategic responses.

62. Effect of Carbon Fiber Composition on Mechanical and Wear Properties of Hybrid Polymer Composite

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Abstract:

Today, polymer composites play a crucial role in manufacturing due to their lightweight and strong properties. Various matrices for reinforcement, such as epoxy, are available; however, their high cost limits their use in some applications. Instead, materials like polyester resin can be utilized to enhance properties, and filler materials can be incorporated based on the specific application. In this work, we aimed to develop polyester composites with carbon fiber in different compositions to improve strength. The mechanical properties are analyzed, and the wear behavior of the material is examined

Keywords:

Carbon fiber, S-Glass Fiber, Filler Material, Polyester etc.

63. Effect of Nano Particles as An Additive on Properties of Biofuels

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Abstract:

There are inherent drawbacks to diesel engines, such as reduction in calorific value and increase in viscosity in biodiesel. There are variety of additives to overcome with these problems. Nanoparticles added to fuel provide a possible means of increasing efficiency and decreasing emission. Fuel containing nanoparticles has the potential to greatly improve engine performance by improving the quality of combustion. The impacts of nanoparticles as fuel additives are reviewed in this work. In this study, Al_2O_3 nanoparticles were selected and effectively dispersed using a Sonica 2400 S3 So nicator. Scanning Electron Microscope (SEM) images of Al_2O_3 nanoparticles were obtained to illustrate their size and shape. The fundamental fuel characteristics of these blends were investigated and compared with pure diesel fuel and the biodiesel blend without aluminum oxide.

Keywords:

Biodiesel; Additives, Nano-Particles; Al_2O_3; SEM

64. Experimental Investigations of Engine Characteristics on A Variable Compression Ratio (VCR) Engine Using Sugarcane Bioethanol

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Abstract:

Biofuels are derived from biomass and encompass a diverse range of fuels that have gained prominence due to various factors, including fluctuating oil prices, energy security concerns, and the desire to reduce greenhouse gas emissions associated with fossil fuels. These renewable energy sources offer significant advantages, particularly for developing countries, where they can drive economic growth and improve living standards through rural development and job creation. This study explores the effects of sugarcane bioethanol blends on engine characteristics in a Variable Compression Ratio (VCR) engine. By varying the compression ratio and bioethanol concentration, the research aims to optimize engine performance, fuel efficiency, and emissions. This investigation provides insights into the potential of sugarcane bioethanol as a sustainable alternative fuel in internal combustion engines.

Keywords:

VCR, Bioethanol, Engine Characteristics.

65. Renewable Energy Solutions for Sustainable Agriculture: Case Study on Solar Dryer Applications

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Abstract:

Solar drying technology offers a sustainable solution for preserving agricultural products, particularly notable for its reliance on renewable energy sources. This study investigates the design, operation, and performance of a solar dryer tailored for drying chilies, a common agricultural product. The solar dryer operates passively, leveraging solar radiation to create a controlled drying environment that enhances efficiency and product quality. Comparative analysis inside and outside the dryer reveals consistent moisture removal rates, highlighting the effectiveness of the technology in mitigating the variability associated with traditional drying methods. Feasibility studies underscore the practicality of integrating solar dryers in agricultural settings, emphasizing benefits such as reduced energy costs and environmental impact. Market trends towards sustainability further support the adoption of solar drying technologies, positioning them as viable solutions to meet growing demands for high-quality, locally sourced produce.

Keywords:

Solar drying, agricultural preservation, renewable energy, sustainability, chili drying, efficiency, feasibility studies.

66. Solar Powered Birds and Animals Scarer

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Abstract:

Rice fields often face challenges from environmental factors and pests, with bird attacks being one of the primary issues. Birds are among the most destructive pests that can significantly impact crop yields in rice fields. Traditionally, farmers have relied on methods such as plastic ropes and scarecrows to deter birds, but these techniques often fall short in effectiveness. This research investigates and compares various bird detection methods using sensors to identify the most accurate approach. Once identified, this method is implemented to automatically repel birds by emitting sound frequencies that birds find unpleasant. The bird repellent device leverages computer vision techniques, using sensors to detect bird presence in each frame, which is then processed by a microcontroller. When a bird is detected, the microcontroller activates an actuator to emit the sound frequency. The primary goal of this research is to design a prototype for monitoring and automatically controlling bird attacks to enhance crop yields in agriculture, utilizing the Internet of Things (IoT) framework.

Keywords:

Solar power, detection sensors, scare.

67. Trajectory Analysis of Robot Arm for Obstacle Avoidance

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Abstract:

Trajectory planning is crucial to the efficient operation of robotic manipulators. This study focuses on trajectory analysis for a given robotic arm, where the desired trajectory is defined by specific parameters, including initial and final points for point-to-point control. The initial point is considered the source, while the final point is the target. The trajectory is generated to ensure optimal travel of the robotic arm. Simulations are conducted using Java in the SIMULINK environment.

For both large- and small-scale industries, achieving the desired orientation and position of robotic manipulators is a fundamental concern. The analysis of robot manipulation involves two types of kinematic analysis: inverse and forward kinematic analysis. In this study, it is focused on developing the inverse kinematic model for five and six degrees of freedom (DOF) robotic manipulators. The motion planning is designed and analyzed using Denavit-Hartenberg (DH) parameters to estimate the desired orientation and position of the end effector. For solving inverse kinematics, traditional methods such as DH notation, iteration, and transformation are employed with joint space trajectory to determine paths for velocity and acceleration analysis. The Cartesian trajectory is applied to find the shortest route, and the transformation matrix for each intermediate point is obtained. Finally, obstacle avoidance is demonstrated, with evaluations of distance, speed, acceleration, and angular displacement to identify the shortest path and avoid obstacles.

Index Terms- Trajectory Planning, Inverse Kinematics, DH Parameters, Robotic Manipulators, Obstacle Avoidance.

68. Understanding Measurement System, Determining and Analyzing the Measurement Variations

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Abstract:

To compete in a global marketplace, manufacturers are increasingly turning to advanced manufacturing techniques to increase productivity and gain a competitive advantage. The paper is concentrated on understanding the measurement system and the instruments used for measurements in the industries. Measurement System Analysis is the six- sigma method of determining the variations in measurement system. For the continuous gauges Gage R&R method is adopted for determining the variations caused due to the appraiser and instrument and analysis is done by ANOVA method using the Minitab Software. For the attribute gauges Kappa study is adopted to determine the variations and analysis is done using the Minitab Software.

Keywords:

Measurement System Analysis (MSA), Gage R&R, Kappa Study, Measurement Variation.

69. Factors Influencing Grievance Management and Employee Engagement in the Workplace: A Case Study of Cement Industry

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Abstract:

This study examines the factors influencing the effectiveness of grievance procedures and their impact on employee engagement within the cement industry. The analysis highlights that while the grievance procedure itself has a limited impact on its effectiveness, significant contributions come from management style, the work environment, and promotion systems. Supportive management and a positive work environment greatly enhance the effectiveness of grievance handling. Fair and transparent promotion practices also significantly reinforce the credibility of grievance processes. Although effective grievance procedures positively influence employee engagement, the effect is relatively modest compared to other factors. The findings suggest that improving grievance management requires a multifaceted approach, incorporating supportive management practices, a conducive work environment, and equitable promotion systems to foster effective grievance resolution and boost overall employee engagement.

Keywords:

Grievance, Procedure, Management Style, Promotion System, Work Environment, Employee Engagement.

70. Digital Transformation in Foundries: Harnessing IoT for Smart Industry 4.0

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Abstract:

The 21st century is marked by the dominance of the internet and electronics, penetrating virtually every facet of existence, spanning from household realms to space-age technologies. This evolving landscape of cutting-edge technology holds potential for application within manufacturing industries, particularly the foundry sector. Presently, the foundry industry faces challenges in terms of energy efficiency and operational hurdles. By integrating IoT resources into this field, fresh avenues for innovation open up. For instance, the utilization of technologies like the Internet of Things (IoT), extensive data analysis, cloud computing, and cybersecurity can help address system complexities. These technologies serve to enhance process efficiency and confer competitive advantages in terms of production speed. In effect, this presents an advanced toolkit that expeditiously bolsters the efficacy of foundry enterprises through the digitization of their processes. This digitization holds promises of diminishing rejection rates, conserving energy, streamlining manpower utilization, and curbing industrial pollution. The implementation of IoT in conjunction with virtual initiatives on the Internet enables real-time monitoring and control of conditions. This synergy aligns with the paradigm shift towards greater digitalization, redefining the foundry landscape and its operational efficiency.

Keywords:

Internet of Things (IoT), Foundry 4.0, castings, Automation, Quality, Rejection.

71. IoT based System for Prevention of Accidents on Pedestrian Bridges

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Abstract:

The increasing frequency and number of bridge collapses, especially the pedestrian bridges worldwide emphasize the immediate attention to strong monitoring and maintenance systems to ensure structural integrity and public safety. The Morbi Bridge (Gujarat) collapse in 2022 is the latest example of such tragic incidents. The major causes for the collapse of the age-old pedestrian bridges are poor maintenance and overloading. An IoT based system is designed and built to avoid an excess number of persons on the long-haul pedestrian bridges to prevent overloading for ensuring the safety of the pedestrians. The system comprising a user-friendly interface, integrates state-of-the-art sensor technologies, real-time data analysis, and preventive maintenance algorithms for continuous monitoring of the structural well-being of pedestrian bridges. Thus, by facilitating proactive maintenance and timely interventions, the system can significantly reduce the possibility of bridge collapses. This paper deliberates on the conception, application, and effectiveness of the system, highlighting its capacity to ensure the safety of the bridges

Keywords:

Pedestrian Bridges, Public Safety, Sensor Technologies, IoT.

Track 4:

Intelligent Computing Systems

72. Advanced Classification of Fundus Tessellation Using Efficient Net and Grad-CAM: A Deep Learning Approach

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Abstract:

We present an enhanced method for classifying fundus images into tessellated and normal categories using an Efficient Net-based Convolutional Neural Network (CNN). With theuseofaMendeleydatabasedatasetthatconsistsof38normal fundus photos and 13 tessellated images, the study successfully divides the data into training and validation sets and uses data augmentation to improve the robustness of the model. With transfer learning and custom layers, the Efficient Net model performed admirably, achieving 97.897% training and validation accuracies. Grad-CAM visualizations provide a detailed evaluation that highlights important elements in the fundus images that affect classification and clarifies the model's decision-making process. This approach, which is completed by a confusion matrix and classification report that show perfect precision, recall, and F1-scores for both classes, not only achieves excellent accuracy but also offers insightful information on the interpretability and predictive emphasis of the model.

Keywords:

Efficient Net, Tessellation, Artificial Intelligence, Myopia, Deep Learning.

73. An Extensive Analysis of the Research Gaps in Crop Yield Improvement and Precision Agriculture Using Automated Machine Learning

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Abstract:

Machine Learning has emerged as a potential tool for solving the problems in areas like Agriculture, Healthcare, Finance, Retail, Simulation, Research, Experimentation and E-commerce, Transportation, Natural Language Processing (NLP) and many more. Integrating Machine Learning approaches in the domain of Precision Agriculture (PA) can become an innovative farming management. This approach involves leveraging various technologies such as sensors, satellite imagery, and machine learning algorithms to collect, analyze, and interpret data for better decision-making in agriculture. The goal of PA is to optimize field-level management regarding crop farming, enhancing productivity, reducing waste, and ensuring sustainability. Agriculture being the backbone of the Indian Economy from decades and even today. Entire economy is sustained by agriculture, which is the mainstay of the villages. Even the same with nations like China, the United States and few others. Exploring the parameters in Precision agriculture the growth, yield quality and quantity can be ensured well.

Keywords:

Artificial Intelligence, Machine Learning, Precision Agriculture, Crop Disease detection.

74. Brain MRI based detection of Alzheimer's Disease – A Review

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Abstract:

One of the most serious neurological disorders in elderly people is the Alzheimer's disease. The existing research articles are summarized in this study. Many researchers are working on the detection and classification of Alzheimer's Disease using the neuro-images that reflect the changes in the brain. The scope of the study is limited to MRI images in ADNI dataset.

Keywords:

MRI (Magnetic Resonance Imaging), ADNI, CNN (Convolutional Neural Network), RNN(Recurrent Neural Network)

75. Brain Tumor Detection using Machine Learning and Deep Learning Models: A Comprehensive Survey

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Abstract:

Cells develop quickly and uncontrollably, which can lead to brain tumors. It could be fatal if treatment is not received in the early stages. Accurate segmentation and classification remain a difficult issue in this domain, despite numerous noteworthy attempts and encouraging results. The differences in tumor size, form, and location present a significant obstacle to the detection of brain tumors. The purpose of this survey is to provide researchers with a thorough literature review on brain tumor detection using magnetic resonance imaging. This assessment addressed deep learning, transfer learning, and quantum machine learning for the analysis of brain tumors, as well as the anatomy of brain tumors, publically available datasets, augmentation approaches, segmentation, feature extraction, and classification. Lastly, this review offers all pertinent data regarding the identification of brain tumors with their advantages and limitations.

Keywords:

Brain imaging features · Segmentation · Feature extraction · MRI.

76. Convolutional Neural Network and Fog Computing Approach for Smart Industry

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Abstract:

The smart industry has made significance change in manufacturing field by integrating advanced technologies, rid off the traditional manufacturing process in the industry, which revolutionize the concept of smart industry. Ensuring product quality and operational efficiency is one of the important tasks in the smart industry. In this paper, we propose integration of Convolutional Neural Networks (CNN) in fog computing enables efficient automated inspection system. High accuracy of image recognition can be achieved from CNN and deploying in fog computing helps to reduce latency, enhance data security and efficient bandwidth usage.

Keywords:

CNN, Automated Inspection System, Fog computing.

77. Detection of Phishing Cyber Attack Using ML Techniques

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Abstract:

One issue with internet security that targets human susceptibility instead of software flaws is phishing. It explained how to draw in internet users in order to obtain their private data, including usernames and passwords. We outline a sophisticated method for identifying phishing websites. The phishing website system is an add-on feature for an internet browser that alerts the user automatically when it comes across a phishing website. The foundation of the system is machine learning, namely supervised machine learning techniques and algorithms. Because of their strong categorization performance, we have chosen the Random Forest and Decision Tree techniques in this case. Phishing websites are cyber attacks that aim to steal personal data from internet users, such as passwords, login credentials, and banking information. Attackers deceive users by making the masked webpage appear authentic or reliable in order to obtain their personal information. Machine Learning (ML) based strategies have been presented as a number of remedies to attacks on phishing websites.

Keywords:

Random Forest, Decision Tree, Machine Learning, Phishing Features, Phishing Website.

78. Glimpse into the Future - Holographic Projection Technology

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Abstract:

Holographic projection technology, once relegated to science fiction, is rapidly approaching reality. This paper offers a glimpse into the future of holography, exploring its historical trajectory from theoretical concept to the cusp of widespread application. We--- examine key milestones in holographic development, delve into current uses across various fields, and then unveil the transformative potential holography holds for the way we learn, communicate, and interact with the world around us.

79. Integrating YOLO and GAN for Robust Signature Detection and Similarity Assessment

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Abstract:

The proposed approach in this study uses the sequence flow of YOLO models and Cycle GAN to detect and extract signatures from scanned documents in conjunction with a template matching strategy. The created dataset was first trained by the model using the v8, v9, and v10 versions of the YOLO model. Owing to its superior signature-detecting skills, YOLO v8 was selected as the top model in a comparison analysis. This YOLO version 8 achieved 98% detection accuracy for signature detection from the scanned documents. Secondly, the model finds and extracts signatures that are noisy. In order to get clear, noiseless signatures, the retrieved signatures were also subjected to a Cycle GAN model-based noise reduction procedure. Thirdly, it assesses the similarity methods used to the original signature templates and the cleaned signature images produced by the GAN in order to verify the efficacy of the noise reduction methodology. The results demonstrate with 92% of average similarities and perform how well the signatures, which makes it valuable for applications requiring precise signature processing. This illustrates how well the suggested approach increases the accuracy of signature extraction, detection, and identification phase, making it a valuable tool for a variety of applications. The results verify that our method has the potential to significantly impact the domains of signature analysis and authentication.

Keywords:

Dataset, YOLO v8, detection, CycleGAN, extraction, similarity.

80. Intrusion Detection Analysis using Deep Learning Models in IoT

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Abstract:

In the rapidly evolving landscape of the Internet of Things (IoT), maintaining strong security is crucial. IoT devices are integrated into many industries which becomes potential points for security breaches. This security breaches may lead to data loss, impact security of the system, and even disruption of operations causing financial loss. IoT environment connected with these devices faces many security attacks namely: data breaches, man-in-middle (MIM) attack, session key attack, denial of service (DoS) attacks. The machine learning (ML) models can be incorporated into these IoT environment so that it becomes possible to detect these security attacks and provide resilience to IoT systems. Our paper provides the implementation of anomaly detection system through deep learning models such as: Convolutional neural networks (CNN), Recurrent neural networks (RNN), and Long Short-Term Memory (LSTM). Also, by comparing the simulation parameters, we justify LSTM model can be effective in detecting the security attacks.

Keywords:

IoT, security threats, machine learning.

81. Precise Forgery Region Identification in Digital Images: A Novel Approach Integrating SIFT, DBSCAN, and K-Means

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Abstract:

In the present era, copy-move forgery detection in digital images has become a challenging problem for researchers. With software like Adobe Photoshop and GISM, etc., manipulating picture information has become easier. One common form of manipulation is known as copy-move forgery, where a portion of an image is copied and pasted onto another part of the same image to conceal or alter information. The challenge here lies in verifying the authenticity of the image after such forgery without access to the original image. In this paper, we propose an approach that identifies interesting key points using the SIFT operator. We select prominent key points, such as core points and border points, by adjusting epsilon values in density-based spatial clustering with noise (DBSCAN) techniques. Furthermore, to cluster salient key points, we have adapted k-means clustering to group similar points and eventually identify the region where copy-move tampering is being done. This proposed approach can be used in real-time image copy-move forgery authentication.

Keywords:

Copy-move forgery detection, key point based, DBSCAN, K-means clustering, locating forged region.

82. Smartsight: Android-Based Retinal Disease Detection Using Retinal Fundus Images with Xai

Dr. B. M. Reshmi, Prof. Nagaraj Kalligud,
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Abstract:

Diabetic retinopathy (DR) is a serious eye condition affecting diabetic patients, stemming from microvascular damage to retinal blood vessels. If not diagnosed and treated early, DR can lead to blindness. Traditional diagnostic methods involve manual examination of retinal images by ophthalmologists, which is labor-intensive and time-consuming. This highlights the need for automated, efficient, and accurate diagnostic tools. This study proposes a deep learning-based framework using ResNet50 architecture enhanced with Gradient-weighted Class Activation Mapping (Grad-CAM) for the automatic detection and classification of diabetic retinopathy from retinal images obtained via a smartphone-based fundus camera. The ResNet50 model, known for its deep residual learning capabilities, was trained on a dataset of retinal images to differentiate between healthy and DR-affected eyes. Incorporating Grad-CAM provides visual explanations by highlighting the retinal image regions most indicative of DR, thereby improving model interpretability. The proposed model demonstrated high performance, achieving 98% accuracy on the training dataset, 91% on the validation dataset, and 96% on the test dataset. These results highlight the model's robustness and potential for facilitating early DR detection, especially in resource-constrained environments with limited access to specialized ophthalmic care.

Keywords:

Diabetic Retinopathy, ResNet50, XAI, GradCAM.

83. Text-to-Video Generator Using Stable Diffusion Model for Dynamic Video Content Creation

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Abstract:

The Text-to-Video Generator using the Stable Diffusion Model is a novel system that transforms textual information into dynamic video content. Leveraging advanced natural language processing techniques, the system preprocesses input text by extracting key information through tokenization, cleaning, and analyses such as named entity recognition and sentiment analysis. It produces a structured video script, organizing the textual content into scenes and shots. During subsequent stages, the system plans visual elements by selecting or generating images and videos to represent the scenes and shots defined in the script. The synthesis or selection of images and videos is followed by a compilation process where visual elements are stitched together to create a cohesive video sequence. The system performs video post-processing to refine the output, applying editing, transitions, and effects for a polished final product. The result is a video file that dynamically captures the essence of the original text.

Keywords:

Text-to-Video Generation, Text-Guided Video Completion, Sync-DRAW, Stable Diffusion Model.

84. Number Plate Recognition in Challenging Environments: A Study

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Abstract:

Optical Character Recognition (OCR) is a sub-area of Computer Vision, which converts different types of text images such as scanned paper documents, photos of documents, natural scene photos or subtitles superimposed on an image into machine encoded text. Vehicle number plates (also known as license plates contain or registration plates or vehicle tags) normally contain the text and numbers. But, in many situations, the number plates in the photographs or CCTV cameras are not clear, due to various conditions, including lighting, raining, fog, condition of the plate, angle & distance, motion blur, reflection, camera quality, plate design and tampering. Hence, a thorough survey of the related works is conducted. The paper presents the datasets, pre-processing techniques, feature extraction and classification approaches employed in these works. A comparative analysis is presented for the benefit of the reader.

Keywords:

Number Plate, Segmentation, Text Recognition, Challenging Environments.

85. Comparative Study on Automated Kidney Stone Detection using Different Techniques

Rubina

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Abstract:

Present lifestyles and food habits are the main reasons for the evolution of human diseases. One of the common and fastest growing diseases is kidney stones in male and female of any age. Diagnosing a kidney stone requires a physical examination followed analysis using medical equipments. Even the medical history of the patient under observation has to be taken into consideration by the physician. Typically testing of urine sample (urinalysis), an abdominal x-ray, a Computerized Tomography (CT) scan, or an ultrasound will be done for the diagnosis. Medical diagnostic procedures are costly and time consuming. So in order to help the doctors and also the patients, the automated kidney stone detection models are implemented using deep learning models. These deep learning models are accurate, efficient and robust. In this paper variety of techniques that uses different imaging modalities for detecting kidney stones have been discussed and compared in detail for better understanding and clarity.

Keywords:

Kidney Stone, Computerized Tomography (CT), Ultrasound, X-ray.

86. AI in Robotics: Objectives, Innovations, and Ethical Implications

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Abstract:

Artificial Intelligence (AI) represents the frontier of technological innovation, where machines are endowed with the ability to simulate human intelligence. It encompasses a diverse array of techniques and methodologies aimed at enabling computers to perceive, comprehend, and act upon data in ways that mimic human cognitive functions. From speech recognition and natural language processing to visual perception and decision-making, AI is revolutionizing industries and everyday life. Its applications span from virtual assistants that respond to voice commands to advanced systems that autonomously navigate vehicles and diagnose medical conditions. As AI continues to evolve, its potential to transform industries such as healthcare, finance, and transportation becomes increasingly evident, promising unprecedented efficiency gains and ethical considerations as society navigates this new era of intelligent machines.

Keywords:

Expert Systems, Limited Theory, Artificial Intelligence, Robotics.

87. An Insight into Key Algorithms for Sentiment Analysis

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Abstract:

The modern technology era has emerged with lots of advancement in Natural Language Processing (NLP), Artificial Intelligence (AI), cybersecurity, Internet of Things (IoT) and other latest technological trends. The sentiment analysis has been considered as one of the important components of NLP. The area is evolving with the usage of transformers and other latest algorithms with considerable increase in accuracy. Hence, there is a need to explore the avenues in the area of sentiment analysis for further investigation. With Recent advancements in text sentiment analysis there is an improvement in the performance and versatility of models. Such an adaptability is due to the usage of variety of techniques, in particular deep learning and transformer-based architectures. In this paper, the basics of sentiment analysis are covered along with the illustration of the latest algorithms, for better understanding of the area.

Keywords:

NLP, Sentiment Analysis, Transformers.

88. Impact of Lumpy Skin Disease Virus on Indian Cattle: A Review of Mitigation Strategies

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Abstract:

The cause of lumpy skin disease (LSD) is the LSD virus (LSDV). This virus belongs to the Poxviridae family and the Capripoxvirus genus, primarily affecting large ruminants, particularly domestic water buffalo and agricultural animals. The first recorded outbreak of Lumpy Skin Disease (LSD) occurred in Zambia in 1929. The disease subsequently spread across Africa and eventually reached Asia and Europe. In Southeast Asia, LSD was first detected in Vietnam and Myanmar in 2020, and by 2021, it had reached Thailand and Laos. Consequently, LSD is a relatively new disease in Southeast Asia, necessitating further research on its pathophysiology, transmission modes, diagnosis, distribution, prevention, and treatment. Lumpy Skin Disease (LSD) is a viral infection that significantly affects cattle, causing considerable economic losses in the livestock industry. This review investigates the impact of LSD on Indian cattle and explores how machine learning (ML) and artificial intelligence (AI) tools can be utilized to develop effective mitigation strategies. Integrating AI technologies in veterinary epidemiology can improve disease prediction, monitoring, and control efforts. This paper investigates the mechanisms of LSD transmission, current and future control strategies, and the potential role of AI and machine learning in disease management. The findings emphasize the importance of combining advanced technologies with traditional methods to improve the effectiveness of LSD control.

Keywords:

Lumpy Skin Disease Virus (LSDV), Capripoxvirus, sheep pox virus (SPPV), goat pox virus (GTPV).

89. A Deep learning Model for Bird Sound Recognition

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Abstract:

Bird sound recognition is a key tool for tracking migration patterns. Bird sound recognition is a rapidly evolving field, driven by advancements in signal processing, machine learning and deep learning techniques. Despite challenges like background noise and data scarcity, innovative techniques such as deep learning and transfer learning are enhancing the accuracy and robustness of recognition systems. Continued interdisciplinary collaboration and the integration of citizen science will further propel the field, contributing to biodiversity conservation and ecological research. This article provides insights of state-of-the-art techniques used for bird sound recognition. Deep learning technique is presented for bird sound recognition and 98.40% recognition accuracy is achieved.

Keywords:

Bird Migration, Bird sound recognition, Deep Learning model, Signal processing.

90. Phishing Detection Using Deep Learning: State of the Art and Future Directions

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Abstract:

One of the most common cybercrimes is phishing, which can be simply defined as observing entities and misrepresenting them to obtain sensitive information. Thus, this paper gives an overview of the techniques for phishing detection based on deep learning. This paper discusses various types of phishing attacks, their detection methodologies, and publicly available datasets for research. It assesses the effectiveness of various deep learning models for detecting phishing activities. Finally, we discuss the challenges and future directions towards improving the efficiency of phishing detection systems

Keywords:

Cyber Crime, Deep Learning, Phishing Detection.

91. Big Data Based Security Analytics for Protecting the Virtualized Infrastructure in Cloud Computing

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Abstract:

Cloud computing virtualized infrastructure has become a target for cyber attackers aiming to execute sophisticated attacks such as ransomware, distributed denial-of-service (DDoS) attacks, and advanced persistent threats (APTs). Our proposed technology could be utilized to develop a big data-based security analytics technique for identifying advanced assaults in virtualized infrastructures. In the proposed work, a new system is developed to detect phishing attempts by analyzing URL structures to handle APTs attacks. As sophisticated cyber threats, including Advanced Persistent Threats (APTs), become more prevalent, there is an increasing need for robust security measures in cloud computing environments. The proposed work explores a newly developed system designed to detect phishing attempts by analyzing URL structures. The system is integrated into a web application to manage user-generated content, incorporating various security features to safeguard against cyber threats.

Keywords:

Cloud, Dijango, Firebase, Security, Phishing.

92. Design and Development of Novel Machine Vision-based Non-Destructive Assessment Techniques for Post-Harvest Fruit Quality Control

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Abstract:

India ranks first in production of Bananas (25.7%), Papayas (43.6%) and Mangoes (40.4%) etc. India's fruit processing sector is now very decentralized. Many units are in the cottage, home-scale, and small-scale sectors, with capacities as low as 250 tons annually, despite the fact that major Indian and international corporations have capabilities of roughly 30 to 50 tons per hour. After China, it comes in second place in the world for fruit output. According to the National Horticulture Database published by NHB, 90.2 million metric tons of fruits were produced in India in 2015–16. India is one of the world's top producers of all deciduous fruits, primarily grown in the Indian states of Jammu and Kashmir, Nagaland, Himachal Pradesh, and Maharashtra. These fruits include apples and pear, peach and plum, berry, and cherry. Non-destructive analysis to examine fruits at their surface without using any invasive methods that compromise the quality and aspect of the food. Nowadays, a number of fruits are used commercially for the inspection, sorting, and grading of their surface qualities, non-destructive evaluation of internal quality, like texture and flavor. However, presents significant technical obstacles. the consistency of form and size, the lack of flaws, and the color of the skin and flesh. Fruit quality considerations include the following: texture-related characteristics including turgidity, hardness, and softness; maturity; firmness; uniformity of size and shape; and the absence of faults in skin and flesh color. The goal of the current multidisciplinary research project is to create a unique non-destructive quality control method for fruits by combining spectral analysis of internal quality attributes with analysis of the fruit photos' external appearance attributes.

Keywords:

Non-invasive quality assessment, local agricultural commodities, physical and chemical properties. Machine Learning.

93. Use of AI Assistance in Online Proctored Exams

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Abstract:

Online proctored examinations have transformed the landscape of assessment, providing convenience and flexibility while simultaneously prompting concerns regarding integrity and security. This study delves into the susceptibilities inherent in these systems, specifically honing in on potential breaches by examinees. Through a thorough examination of the elements comprising online proctoring - encompassing client interfaces, provider platforms, and server infrastructure - we identify loopholes and vulnerabilities that could be exploited. Furthermore, we explain a systematic approach students use to partake in academic dishonesty, utilizing tools such as virtual machines and counterfeit camera feeds. To combat these issues, we suggest practical remedies, such as the creation of Python scripts for monitoring video feeds for abnormalities and enhancements to website coding to deter exploitation. This research underscores the necessity for robust security protocols and the incorporation of Artificial Intelligence to protect the integrity of online proctored exams in the modern digital age.

Keywords:

Online Proctored Exams, Vulnerabilities, Academic Misconduct, Security Measures, Artificial Intelligence, ChatGPT.

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The aim of the conference is to identify sustainable engineering practices and to explore their implementation on a broader scale, considering economic, social, and environmental impacts. This international conference on sustainable solutions in engineering and technology promotes the transfer of sustainable technologies, methodologies, and practices from research institutions to industries fostering innovation and driving the adoption of sustainable solutions.

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