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December 27th 2024



CITY ENGINEERING COLLEGE

Approved by AICTE New Delhi & Affiliated by VTU,
Belagavi, Doddakallasandra, Off Kanakapura Main Road,
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NATIONAL CONFERENCE

ON

EMERGING TRENDS IN SCIENCE, ENGINEERING AND TECHNOLOGY PROCEEDINGS

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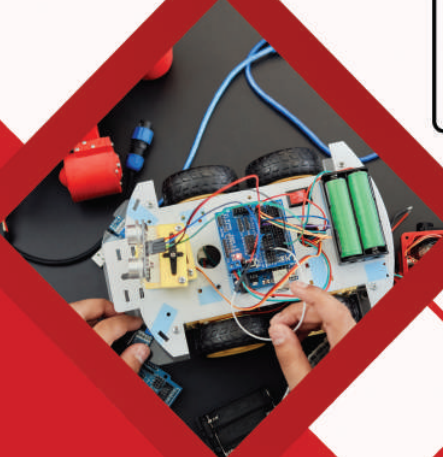
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City Engineering College, established under Jayanagar Education Society by Dr.K.R.Paramahamsa, Chairman in the year 2001. CEC is one of the most sought colleges by students from across the country for Engineering and Management Education. The college believe in providing a high-quality education to the prospective professionals of the country for which necessary quality bench marks have been put in place, in the areas of faculty recruitment, training and development, teaching and learning process, student’s grooming, external academic audits and feedback system for academic enhancement.

Centrally located in Vasantha Vallabha Nagar, Bengaluru and near to Doddakallasandra Metro Station, ISKCON and Forum Mall. With lush green campus spanning 12 acres of land.

AFFILIATION AND ACCREDITATION



PREFACE

In the rapidly evolving world of science, engineering, and technology, staying ahead of the curve requires a continuous exchange of knowledge, ideas, and innovations. The National Conference on Emerging Trends in Science, Engineering, and Technology (NCETSET) has been designed to provide a dynamic platform for researchers, scientists, engineers, and industry professionals to come together, share their cutting-edge research, and engage in thoughtful discussions on the most pressing issues and exciting advancements in these fields.

As we stand at the crossroads of unprecedented technological progress, the role of emerging trends in shaping the future of industries, economies, and societies cannot be overstated. From artificial intelligence to renewable energy, from smart cities to biotechnology, and from nanotechnology to cybersecurity, the scope of innovation is vast, and its potential transformative impact is immense. NCETSET aims to explore these emerging areas, highlighting the opportunities, challenges, and societal implications of these advancements.

The primary goal of this conference is to foster collaboration and knowledge-sharing among diverse stakeholders. It brings together thought leaders, academic researchers, industry experts, and young innovators from across the nation and beyond to discuss critical topics, showcase breakthrough research, and chart the course for the future of science and technology. Through keynote sessions, paper presentations, workshops, and panel discussions, we hope to ignite new ideas and inspire future innovations.

The conference provides an invaluable opportunity for participants to gain insights into the latest trends, exchange ideas with peers and experts, and explore possible avenues for future research and development. It also offers a unique platform for students, researchers, and professionals to present their work and receive feedback from a community of like-minded individuals.

We sincerely hope that NCETSET 2024 will act as a catalyst for furthering collaboration, sparking innovative ideas, and advancing knowledge that will contribute to the continued progress of science and technology in addressing the challenges and opportunities of tomorrow.

We extend a warm welcome to all attendees and participants and look forward to a successful and enriching conference that will set the stage for ground breaking developments in science, engineering, and technology.

ABOUT THE CONFERENCE

National Conference on Emerging Trends in Science, Engineering and Technology (NCETSET)

The National Conference on Emerging Trends in Science, Engineering, and Technology (ETSET) is an academic event designed to provide a platform for researchers, scientists, engineers, and technology experts to discuss, explore, and showcase the latest advancements in various domains of science and technology. The conference typically covers a wide array of topics within the fields of science, engineering, and technology, including but not limited to:

- ❖ Artificial Intelligence and Machine Learning
- ❖ Big Data and Data Analytics
- ❖ Internet of Things (IoT)
- ❖ Robotics and Automation
- ❖ Renewable Energy and Sustainability
- ❖ Nanotechnology
- ❖ Cybersecurity
- ❖ Blockchain and Cryptography
- ❖ Biotechnology and Biomedical Engineering
- ❖ Quantum Computing
- ❖ Materials Science
- ❖ Smart Cities and Urban Planning
- ❖ Telecommunications and Networks

Purpose and Objectives:

- 1. Knowledge Sharing:** The conference aims to create a platform for the exchange of ideas and research findings among scholars, professionals, and students.
- 2. Innovations in Technology:** Highlighting and exploring emerging technologies and their potential impact on industries, economies, and societies.
- 3. Networking:** Encouraging collaboration and networking among academic researchers, industrial professionals, and technology practitioners.
- 4. Academic Dissemination:** Providing an opportunity for researchers to present their work and contribute to the academic discourse in the field of science and engineering.
- 5. Future Directions:** Exploring the future directions of science and technology and discussing how emerging trends could shape the future.

Features of the Conference:

- 🔗 **Keynote Speakers:** Renowned experts and thought leaders from academia, industry, and government are invited to deliver keynotes, providing insights into current and future trends.
- 🔗 **Paper Presentations:** Researchers are encouraged to present their research papers on specific topics. These presentations are usually followed by Q&A sessions.
- 🔗 **Workshops and Tutorials:** Specialized sessions on practical aspects, tools, and methodologies related to the themes of the conference.
- 🔗 **Panel Discussions:** Panels consisting of experts and professionals discussing critical issues and challenges facing specific fields.
- 🔗 **Exhibitions:** Companies, startups, and institutions may set up exhibitions to showcase innovative products, solutions, or research work.

Target Audience:

- 🔗 **Academicians:** Professors, researchers, and scholars from universities and research institutes.
- 🔗 **Students:** Undergraduate, postgraduate, and doctoral students in science, engineering, and technology fields.
- 🔗 **Industry Professionals:** Engineers, scientists, technologists, and entrepreneurs working in tech-driven industries.
- 🔗 **Government and Policy Makers:** Representatives from government agencies and policy institutions that shape the future of technology and innovation.

Benefits of Attending:

- 🔗 Stay up-to-date with the latest trends and breakthroughs in science and technology.
- 🔗 Gain insight into the potential applications and societal impact of emerging technologies.
- 🔗 Interact with experts, innovators, and thought leaders in the field.
- 🔗 Participate in discussions about the challenges and opportunities in science, engineering, and technology.
- 🔗 Present your research and gain feedback from a broad audience.
- 🔗 Build academic and professional networks that may lead to future collaborations or career opportunities.

Conference Themes and Topics:

The themes of the conference may change from year to year based on the most relevant and cutting-edge research areas. However, key themes may include:

- 1. Sustainable Technologies for the Future:** Addressing environmental concerns through green technology and sustainability practices.
- 2. AI and Automation:** Exploring the latest in artificial intelligence, machine learning, and automation and their impact on industries.
- 3. Healthcare Innovations:** The role of technology in transforming healthcare and improving quality of life through biomedical engineering and health-tech solutions.
- 4. Smart Infrastructure:** Development of smart cities and digital infrastructure using IoT, sensors, and connected systems.
- 5. Advanced Materials and Nanotechnology:** Cutting-edge research in nanomaterials, 3D printing, and material science.

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Doddakallasandra, off Kanakapura Road, Bengaluru 560062

Presents National Conference on

Emerging Trends in Science, Engineering and Technology (NCETSET 2024)

27th December 2024

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Organised by

Department of CSE, ISE, AI&ML and MCA

In Association with

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City Engineering College

City Engineering College was established under Jayanagar Education Society by Dr K.R Paramahansa, Chairman in the year 2001. The college provides degrees in fields such as Computer Science, Electronics and Communication, Civil, Mechanical and Electrical Engineering.

The college emphasizes quality education, research, and practical learning through state-of-the-art facilities, modern labs, and industry tie-ups. The College has several departments such as CSE, ISE, AIML, ECE, Civil, ME, CSE (IOT), BBA, BCA, MCA, MBA along with Ph.D. programme. With a focus on holistic development, City Engineering College prepares students for successful careers in the ever-evolving technology and engineering sectors.

About The Conference

The Conference focuses on exploring cutting-edge engineering solutions to address global sustainability challenges.

Objectives of the conference is promoting innovation in sustainable engineering, facilitating knowledge sharing among researchers and experts fostering collaborative networking across academia and industry, raising awareness about sustainability issues and addressing key challenges through practical solutions.

Outcomes expected from the conference are the generation of innovative solutions, strengthened research collaborations, the formulation of actionable strategies, advocacy for supportive policies, increased awareness of sustainable practices, and enhanced capacity building among students and professionals.



Registration Details

WHO CAN APPLY? Academicians/Industrialists/Research Scholars/PG & UG Students

LIIMIT- Max. 6 Authors per paper

MODE- Hybrid


FEE
INR 2000/- for Academicians/ Industrialists/Research scholars
INR 1500/- UG & PG Students

IMPORTANT DATES:
Abstract Submission Deadline: December 12nd, 2024
Paper Acceptance Confirmation: December 15th, 2024
Camera Ready Paper & Registration: December 25th, 2024

Participants can submit the abstract to the following form link:
<https://forms.gle/Z9mRFekx8JtaRMnF7>

All Accepted papers will be provided with E-Proceedings along with ISBN number.

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**National Conference on
EMERGING TRENDS IN SCIENCE, ENGINEERING AND TECHNOLOGY
(NCETSET 2024)**



27th December, 2024

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NCETSET 2024

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CALL FOR PAPERS

The call for papers invites submissions from diverse stakeholders including industries, research and development (R&D) institutions, scholars, and government departments, focusing on research rooted in science and engineering. Papers should contribute novel insights, methodologies, or findings relevant to sustainable development. Guidelines emphasize originality, relevance, and rigor in research methodology. Submissions should adhere to formatting requirements and undergo a peer-review process for selection. The call aims to facilitate knowledge exchange and collaboration among stakeholders, fostering innovative solutions for addressing pressing global challenges.

Participants have to send an abstract not more than 200 words to <https://forms.gle/Z9mRFekx8JtaRMnF7>. After acceptance, full length original research contributions and review articles not exceeding 6 pages shall be submitted. The template for the manuscript will be communicated through official mail id. The manuscript should not have been published in any journals/magazines or conference proceedings and not under review in any of them.

All Accepted papers will be provided with E-Proceedings along with ISBN number.

TOPICS (NOT LIMITED TO)

- | | | |
|------------------------------------------|--------------------------------|----------------------------------------|
| Internet of Things (IoT) | Renewable Energy Technologies | Fusion Energy Research |
| Advanced Manufacturing | Advanced Materials Science | Ocean Exploration Technologies |
| Augmented Reality | Biotechnology | Renewable Fuels Research |
| Virtual Reality | Clean Energy Systems | Carbon Capture and Storage |
| Synthetic Biology | Nanotechnology | Human Genome Sequencing |
| 3D Printing/Additive Manufacturing | Artificial Intelligence | Bioinformatics |
| Machine Learning | Robotics | Sustainable Urban Planning |
| Big Data Analytics | Quantum Computing | Remote Sensing Technologies |
| Sensor Technologies | Genetic Engineering | Climate Change Adaptation Technologies |
| Advanced Transportation Systems | Sustainable Chemistry | Renewable Energy Storage Technologies |
| Environmental Monitoring Technologies | Climate Modeling | Sustainable Packaging Materials |
| Clean Water Technologies | Space Exploration Technologies | Green Building Technologies |
| Precision Agriculture | Photonics | Energy-Efficient Electronics |
| Wearable Technologies | Biomedical Engineering | Advanced Transportation Fuels |
| Smart Cities Technologies | Cybersecurity | Environmental Remediation Technologies |
| Sustainable Food Production Technologies | Data Science | Medical Imaging Technologies |

IMPORTANT DATES

Last date for Abstract Submission	December 12th, 2024
Paper Acceptance Confirmation	December 15th, 2024
Camera Ready Paper submission with payment	December 25th, 2024
Conference Date	December 27th, 2024

REGISTRATION DETAILS

WHO CAN APPLY?
Academics/Industrialists/Research Scholars/PG & UG Students
Limit - Max. 6 Authors per paper

MODE Hybrid

FEE
INR 2000/- for Academics/Industrialists/Research scholars

INR 1500/- UG & PG Students

Participants can submit the abstract to the following link:
<https://forms.gle/Z9mRFekx8JtaRMnF7>

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Principal, CEC, Bengaluru

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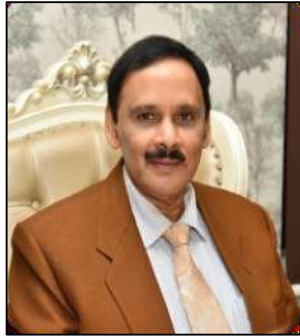
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Chairman's Message



Dr.K.R.Paramahansa

Chairman,

AMC – CITY – BROOKLYN – CAMBRIDGE Group of Institutions

Hearty Greetings

A warm welcome to City Engineering College, the **National Conference on Emerging Trends in Science, Engineering, and Technology (NCETSET)** is an important milestone in our ongoing efforts to foster collaboration, ignite innovation, and facilitate the exchange of knowledge in the rapidly evolving fields of science, engineering, and technology.

As we stand at the cusp of a new technological era, we are witnessing breakthroughs that are reshaping industries and transforming societies. From artificial intelligence and quantum computing to sustainable energy solutions and biotechnology, the pace of innovation is accelerating, and its impact is profound.

The purpose of this conference is not only to present the latest research and innovations but also to engage in meaningful dialogue that bridges the gap between academia, industry, and government. Through keynote speeches, technical sessions, workshops, and panel discussions, we hope to stimulate critical thinking and provide a platform for sharing insights, ideas, and solutions to some of the most pressing challenges facing our world today.

I firmly believe that collaboration is the key to unlocking the full potential of emerging technologies. By working together, we can address the complex issues that lie ahead and drive progress in a way that benefits society at large. This conference is a testament to the power of collective wisdom, and I am confident that it will inspire new partnerships, spark innovative ideas, and pave the way for future breakthroughs in science and technology.

Principal's Message



Dr.S.Karunakara

Principal,

City Engineering College, Bangalore, India.

Greetings...

As the principal of City Engineering College, I am delighted to see this event unfold, bringing together bright minds, innovators, and experts from diverse fields to engage in deep discussions and share their groundbreaking research.

In today's world, science, engineering, and technology are not just tools for development; they are the driving forces that shape our future. With the rapid pace of technological advancements in areas such as artificial intelligence, robotics, renewable energy, and biotechnology, we find ourselves at the forefront of an extraordinary era of transformation. The potential of these emerging trends is limitless, but with great power comes great responsibility. The decisions we make today will determine the kind of future we build for generations to come.

The NCETSET conference serves as an invaluable platform for exploring these emerging trends, addressing the challenges that accompany them, and discussing innovative solutions that can help us create a better world. As an academic institution, we recognize the importance of fostering intellectual curiosity, critical thinking, and interdisciplinary collaboration. The knowledge shared here will inspire not only the present generation of researchers and professionals but also the young minds who will drive the innovations of tomorrow.

I would like to take this opportunity to express my heartfelt gratitude to the organizing committee, the distinguished speakers, and the participants who have made this conference possible. Your commitment to advancing knowledge and driving positive change in the world is truly commendable. I also extend my sincere thanks to the sponsors and partners who have supported this event and made it possible for us to come together and share in this extraordinary experience.

INVITATION



CITY ENGINEERING COLLEGE
Doddakallasandra, Kanakapura Road, Bengaluru-560061

Department of
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We cordially invite you to the Inaugural Ceremony of
National Conference
on
EMERGING TRENDS IN SCIENCE, ENGINEERING
AND TECHNOLOGY (NCETSET 2024)

27TH DECEMBER, 2024

Time: 10 am Venue: CEC Auditorium

CHIEF GUEST



Mrs. PRIYANKA NEHRU

SAP Technology Recruitment Manager-South East Asia and
Vice President of SAP Cloud Solutions in Canada.

Regards from

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Principal, City Engineering College

Dr. SOWMYA NAIK
HOD, CSE, CEC

Prof. NANDISH A C
HOD, AI&ML, CEC

Dr. SAKTHIVEL B
HOD, ISE, CEC

Dr. PUJA SHASHI
HOD, MCA, CEC

&

MANAGEMENT & STAFF MEMBERS OF CITY ENGINEERING COLLEGE

Chief Guest Message



Mrs. Priyanka Nehru

*SAP Technology Recruitment Manager for South East Asia and
Vice President of SAP Cloud Solutions, Canada*

Ladies and Gentlemen

It gives me great pleasure to be with you in this incredible event - **National Conference on Emerging Trends in Science, Engineering, and Technology (NCETSET)** to be held on 27th 2024, Organized by City Engineering College-Karnataka.

Any conference is designed to debate current and developing challenges in a specific educational topic while also raising awareness among other researchers and scholars. In the fields of education and multidisciplinary technologies and applications, we have seen significant advancements. We need appropriate platforms, such as these conferences, to meet these anticipated advancements.

This is not only a learning opportunity but also a place to competitively test your contributions with the best in the profession. Most importantly, this is the time to get away from your daily tedious routine on a holiday and have some fun. I am sure this conference will create ample scope for all the ideas I have floated above and in addition, be a place for cultural and multi-ethnic exchanges and interactions.

I am confident that the **National Conference on Emerging Trends in Science, Engineering, and Technology (NCETSET)** will establish itself as the premier event, showcasing the most cutting-edge multidisciplinary and educational innovations to find answers to unreciprocated questions of many.

Thank you Very Much – Wish you good Luck!!

Convenor's Report



Dr. Sowmya

*Professor and HOD,
Dept. of Computer Science and Engineering,
City Engineering College,
Bangalore, Karnataka, India.*

Warm Greetings...

The core motive of conducting conferences is to exchange the raw research work with all the concerned and interested. Primarily, the concerned authors are explored with many other possibilities of improvising their work through reviewer's comments and also provide a platform to connect with people working in related domains. The NCETSET-2024 is a multidisciplinary conference with papers from many other countries.

I personally feel proud to receive diversified articles to mean that the topics are "Not limited to". We have totally received Fifty (50) papers. The takeaways of each individual involved in the process is an experience and updated knowledge of recent developments in various areas of Engineering, Science and Management.

The purpose is served, if the same knowledge is spread to as many people towards solving issues of our society. I would like to thank our Management and Principal for permitting towards conducting the conference. I would like to thank all HOD's, staff and authors involved directly and indirectly towards successful conduction of the conference.

**National Conference on Emerging Trends in Science,
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27th December 2024

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Conference Next



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MOUNTAIN CLIMBER HEALTH AND GPS TRACKER

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ABSTRACT

The “Smart Jacket Using LoRa with GPS”; is a sophisticated wearable designed explicitly for mountain climbers who brave harsh, cold-weather conditions. The primary objective of this project is to create a wearable that not only keeps climbers warm but also helps them stay connected, informed, and safe during their high-altitude journeys. A state of the art heating element has been integrated to provide adjustable warmth, ensuring that the climbers remain comfortable and protected from extreme cold condition. The Smart Jacket integrates Lora (Long-Range) technology and GPS (Global Positioning System) to provide an array of features that are essential for mountain climbers. The built-in GPS module allows climbers to track their precise location, aiding in navigation and ensuring that rescue teams can locate them in case of Emergencies the Lora module enables climbers to send and receive messages over long distances, helping them stay in contact with their team members or request assistance when needed. The jacket is equipped with sensors to monitor temperature, heart rate, SPO2 value, and GPS coordinates. Climbers can access real-time environmental data to make informed decisions about their journey and adjust their clothing or gear accordingly. The climber wearing the smart jacket can send alerts to the receiver if the climber detects sudden temperature drops, rapidly changing weather conditions, or other potential dangers, enhancing climber safety. The jacket features an efficient power management system to ensure extended battery life, which is vital for prolonged climbs.

**A COMPREHENSIVE REVIEW OF SCALABLE DIGITAL
PLATFORMS FOR ALUMNI COMMUNITY BUILDING AND
PROFESSIONAL GROWTH**

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ABSTRACT

This paper presents the design and implementation of a scalable digital platform aimed at empowering alumni networks. The platform serves as a hub for community building and professional growth, offering a range of features such as profile management, communication interfaces, event notifications, job postings, and feedback mechanisms. By leveraging this platform, institutions can foster stronger connections between alumni, students, and colleges, while also enabling contributions like donations and project funding. The proposed solution emphasizes security, usability, and scalability to ensure long-term impact and engagement.

**SIMPLE TOUCH ANDROID APPLICATION FOR COLLEGE
EVENTS MANAGEMENT USING FIREBASE**

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ABSTRACT

The “Simple Touch” Mobile Application is a versatile tool designed to transform event management and handling of events for college student clubs. Primary goal is to streamline and simplify the management and promotion of events and also receiving real-time notification of the events, eliminating the reliance on paper-based processes. The application specifically targets event management, principles to facilitate the creation and execution of diverse events. The “Simple Touch” Mobile Application promises to redefine event management by providing an in depth, built-in, and adaptable platform that caters to the dynamic needs of various clubs and communities.

HUMAN FOLLOWING ROBOT USING ARDUINO UNO

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ABSTRACT

This paper presents the design and implementation of a "Human following robot with Arduino UNO". The rapid advancement of robotics has enabled the development of autonomous systems capable of human-following tasks. The robot uses Sensors, Motors and Arduino UNO to achieve this function. Each sensor played a critical part in detecting human behaviors. To implement a complete motion, attached motor driver shield was used to control four motors by one L298N 2A Dual drivers. The code was written in C and Arduino IDE was used as a code editor integrated development environment. Ultrasonic sensor detected human in range to make the robot move forward. While two IR sensors triggered L298N 2A Dual drivers which turns the robot towards left or right based on signal of IR sensors. The robot was created that abled to detect and follow human for his requirement. It could Weightage Career and A Voice-Controlled.

AGRIBOT FOR AUTOMATED FARMING

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ABSTRACT

Agriculture is a vital sector that faces numerous challenges such as labor shortages, inefficient resource usage, and unpredictable yields. To address these issues, this project introduces an AgriBot, a multi-functional robotic system for automated farming, integrated with IoT and machine learning. Powered by ESP32, the AgriBot performs tasks such as ploughing, digging, seeding, and watering based on soil moisture levels. It also monitors soil fertility using NPK sensors and upload environmental data, including temperature, humidity, and soil fertility, to Thing Speak. Additionally, a machine learning model running on a laptop predicts crop yield and fertilizer requirements using the random forest algorithm, providing actionable insights. Notifications are sent to farmers via Telegram, ensuring timely decision-making. This system reduces manual labor, optimizes resources utilization and enhances the agricultural productivity.

PREDICTION OF ANTIBIOTIC RESISTANCE IN UTI

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ABSTRACT

Urinary Tract Infections (UTIs) are a significant global health concern, particularly with the rising concern about antibiotic resistance, which makes quick diagnosis crucial. Machine learning (ML) has emerged as a useful tool, capable of analysing complex data and predicting resistance patterns. This can lead to better treatment strategies and help reduce the misuse of antibiotics. Many current methods rely on traditional approaches or basic ML models that often use incomplete datasets and don't have solid validation, which restricts their practical application in clinical settings. This really underscores the importance of developing advanced ML models that are trained on real patient data to offer meaningful insights into resistance trends. In this study, we present a Random Forest-based model aimed at predicting antibiotic resistance in UTIs. We utilized 466 records, including 35 real-time patient records sourced from a government hospital in Bengaluru. After preprocessing and feature engineering, our model achieved an impressive 95.7% accuracy, with precision scores of 96% for antibiotics deemed sensitive and 95% for those identified as resistant. These results demonstrate its strong predictive capabilities, positioning it as a valuable asset in enabling more well-informed treatment choices and enhancing patient outcomes.

BLOCKCHAIN IN THE ELECTRONICS INDUSTRY FOR SUPPLY CHAIN MANAGEMENT

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ABSTRACT

The supply chain industry has experienced significant transformations over the past century. Starting as a minimal framework in its initial stage (1.0), it evolved to include basic record-keeping capabilities in stage 2.0 and enabled communication between entities in stage 3.0. The current stage, Supply Chain 4.0, represents a globally integrated system involving multiple entities with digitalized records. However, as the number of entities and processes increases, challenges such as complexity, overhead, and security vulnerabilities arise. Integrating blockchain technology into supply chain management addresses these issues by improving transparency, traceability, and security among stakeholders. By replacing centralized systems with a decentralized ledger, blockchain ensures data integrity and prevents unauthorized access. Its cryptographic properties make supply chain data secure and accessible only to authorized participants. Additional features include a "SUPER ADMIN" module for advanced user management and location tracking to monitor products throughout the supply chain lifecycle. Utilizing the Ethereum blockchain and smart contracts developed in Solidity enhances transaction management and facilitates seamless interactions among supply chain participants, creating a more efficient and reliable system.

AI DRIVEN MENTAL HEALTH DIAGNOSTIC PLATFORM

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ABSTRACT

Zentra is an AI-driven mental health platform that leverages advanced machine learning algorithms to deliver personalized and accurate mental health diagnostics. By analyzing user inputs such as mood patterns, behaviors, and symptoms, Zentra identifies potential mental health conditions, including anxiety, depression, and stress. It goes beyond mere identification by offering tailored recommendations, coping strategies, and resources, empowering users to take proactive steps in managing their mental well-being. Designed with accessibility and convenience in mind, Zentra provides an intuitive and user-friendly experience, ensuring support is available whenever and wherever it's needed. The platform encourages self-awareness by helping users track and understand their mental health journey over time. Through actionable insights and personalized care strategies, Zentra fosters a greater sense of control and clarity in user's mental health management. Zentra is committed to creating a supportive mental health ecosystem, blending cutting-edge technology with a human-centered approach. By utilizing data-driven insights, it bridges the gap between traditional mental health resources and modern digital solutions, making mental health support more accessible to all. Zentra's mission is to empower individuals to prioritize their mental health, encouraging early intervention and fostering a culture of openness and understanding in mental health care.

AGRICULTURE, FOOD TECH AND RURAL DEVELOPMENT

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ABSTRACT

This paper explores the interconnected roles of agriculture, food technology, and rural development in addressing global challenges such as food security, environmental sustainability, and rural livelihoods. Agriculture serves as the cornerstone of food production, while food technology introduces innovative methods to enhance efficiency, improve nutritional value, and reduce food waste. Rural development focuses on uplifting communities through improved infrastructure, education, and access to resources, ensuring equitable growth and inclusion.

VITILIGO DETECTION USING CONVOLUTIONAL NEURAL NETWORKS

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ABSTRACT

Artificial intelligence (AI) and deep learning are transforming healthcare by introducing advanced diagnostic tools. Convolutional Neural Networks (CNNs) have proven highly effective for image-based analysis, making them a viable technology for detecting dermatological conditions like vitiligo. Automated detection processes can assist in early diagnosis and improve the accuracy of treatment planning. Currently, vitiligo diagnosis relies heavily on manual clinical assessment, which can be subjective and inconsistent. Existing automated skin disease detection systems often lack specificity, accuracy, or accessibility, and few are tailored specifically for vitiligo. These limitations highlight the need for a robust and user-friendly solution that is widely accessible. The research proposes the development of a CNN-based vitiligo detection model integrated into a web application. Users can upload skin images for real-time classification as vitiligo-affected or healthy skin & the solution aims to provide a cost-effective, accurate, and accessible tool for patients and healthcare professionals.

**ADVANCES IN WEARABLE SENSOR SYSTEMS FOR
MONITORING TASK-SPECIFIC TREMORS:
THE ROLE OF MACHINE LEARNING IN WRITER'S CRAMP**

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ABSTRACT

Writer's cramp, task-specific dystonia, involves tremors and abnormal muscle contractions during fine motor tasks like writing, significantly affecting daily activities. Real-time monitoring of these tremors is critical for understanding their dynamics and supporting effective diagnosis and treatment. This paper explores advancements in wearable sensor systems for detecting and analyzing tremors associated with writer's cramps, emphasizing the integration of machine learning for real-time tremor classification. Wearable sensors, such as accelerometers and strain gauges, provide continuous, non-invasive monitoring by capturing parameters like frequency, amplitude, and movement patterns. This data is vital for differentiating writer's cramps from conditions like Parkinson's disease. Machine learning algorithms enhance detection accuracy by identifying subtle, condition-specific patterns. Trained on extensive datasets, these models classify tremors by severity, enabling personalized diagnostics and treatment strategies. The system also integrates user-centered design with real-time feedback and secure data transmission, ensuring ease of use for patients and healthcare providers. Continuous monitoring facilitates timely interventions, while adherence to safety and regulatory standards ensures clinical reliability. Combining wearable sensors, machine learning, and intuitive design offers a transformative solution for real-time tremor monitoring and effective management of writer's cramps.

AGROCONNECT: SMART AGRICULTURE USING IOT

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ABSTRACT

Smart agriculture leverages Internet of Things (IoT) technologies to improve farming practices by enabling data-driven decisions. This paper presents an IoT-based system for real-time monitoring of environmental parameters, crop recommendation, and predictive analytics. The proposed system integrates sensors, cloud-based data processing, and machine learning algorithms to optimize resource usage, reduce operational costs, and enhance crop yield. With features such as pest outbreak prediction and water management, the system promotes sustainable agriculture. Testing shows significant improvements in resource efficiency and decision-making accuracy, demonstrating its potential to transform modern farming.

LEMON PEEL: A NUTRIENT-RICH SOURCE OF BIOACTIVE COMPOUNDS AND HEALTH BENEFITS

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ABSTRACT

Citrus limon (lemon), an evergreen small tree native to South Asia, belongs to the Rutaceae family. It is widely recognized for its nutritional and medicinal properties and is one of the most important species within the citrus family. Lemon is a significant source of various bioactive compounds, including pectin, both water-soluble and insoluble antioxidants, and essential oils. While much of the lemon's by-products, such as peel, are typically discarded as waste, they are in fact rich in valuable nutrients and compounds with potential health benefits. Traditionally, lemon has been used in medicine for its many therapeutic effects, such as its ability to prevent kidney stones, reduce fever, balance pH levels, and combat cancer. Among the different parts of the lemon, the peel is especially notable for its high concentration of phytochemicals, which contribute to its potent antioxidant and antimicrobial properties. Lemon peel exhibits a remarkable nutritional and bioactive profile, showcasing its potential health benefits. It contains a Total Phenolic Content of 61.23 mg GAE per 100 g and a Total Flavonoid Content of 59.9 mg CE per gram, both of which contribute to its antioxidant properties. Additionally, it provides 25.68 mg of Ascorbic Acid per 100 g and demonstrates an Antioxidant Activity of 46.98% DPPH Reduction. Lemon peel offers 64.07 g per 100 g of dietary fiber, along with a notable pectin content of 22.53%. Furthermore, it includes Linoleic Acid, comprising 13.76–36.9% of its oil content, emphasizing its array of bioactive compounds and essential nutrients. Lemon peel has been shown to possess significant antimicrobial activity, along with astringent effects. In addition to these properties, it also exhibits anti-dermatophytic, anti-urolithic, and nephroprotective effects. Research indicates that lemon peel can positively impact plasma and liver cholesterol levels, boost immune function, and enhance the absorption capacity of certain compounds. Moreover, it is a promising source of pectic oligosaccharides, which further increase its nutritional value.

**WOMEN SAFETY ANALYTICS-PROTECTING WOMEN FROM
SAFETY THREATS**

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ABSTRACT

Protecting women from safety threats involves a comprehensive approach that addresses societal norms and stereotypes, provides psychological support, strengthens legal frameworks, and leverages technological solutions. This also includes community involvement and economic empowerment. Societal interventions aim to promote gender equality and respectful relationships through education and community programs, while psychological support is crucial for women who have experienced violence or threats. Legal frameworks need to be robust and effectively enforced to protect women from various forms of violence. Technological solutions, such as mobile applications for emergency assistance, play a significant role in enhancing safety. Engaging communities in creating safe environments and supporting women's economic independence are also vital in reducing vulnerabilities and promoting a culture of respect and equality. Collaboration among governments, NGOs, communities, and individuals is essential for effective implementation and lasting change.

ELECTROMAGNETIC PULSE GENERATOR

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ABSTRACT

Electromagnetic pulse (EMP) generators are devices capable of producing high-intensity electromagnetic fields that can disrupt or disable electronic systems. These devices hold significant potential across various fields, including defense, research, and testing of electronic resilience. This project focuses on the design and implementation of an electromagnetic pulse generator with controllable pulse characteristics, enabling precise evaluation of its effects on electronic equipment. The study includes an analysis of energy transfer mechanisms, pulse shaping techniques, and their impact on electronic systems. Based on the findings, a framework is proposed to enhance the efficiency and reliability of EMP generators while minimizing unintended interference.

**DEVELOPMENT AND EVALUATION OF MECHANICAL
PROPERTIES OF SUBZERO TREATED A356-ZRO 2 METAL
MATRIX COMPOSITES**

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ABSTRACT

In the present study, A356-ZrO₂ metal matrix composites were developed by making use of the stir casting technique. The dispersed particle size was from 33 microns to 44 microns. The particles were added to the base material from 2 wt% to 8 in an increment of 2 wt% each. ZrO₂ particles were introduced to the matrix melt, the stirrer was used to create a vortex, which enhances the particle distribution into the matrix. The melt temperature was kept between 800 to 850°C. These composites were subjected to subzero treatment (Cryotreatment) i.e., the composite specimens were subjected to a freezing temperature of -196°C in liquid nitrogen gas (N₂). The composites developed have a homogeneous distribution of reinforcement in the matrix alloy, with significant grain refinement and residual porosity, according to microstructural investigations. When compared to the matrix, mechanical characteristics show that the addition of ZrO₂ particles improved strength and hardness while reducing ductility slightly.

**MECHANICAL PROPERTIES OF HEMATITE REINFORCED AL-
CU ALLOY METAL MATRIX COMPOSITES BY DIRECT
SQUEEZE CASTING METHOD**

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ABSTRACT

Metal Matrix Composites are processed through casting process and it ensures a very promising way of manufacturing close to net shape composites at relatively low cost. The liquid metallurgy squeeze casting technique exhibits appropriate characteristics such as fine microstructure which is due to rapid cooling, low porosity and good bonding between the particles and base alloy. This study has assisted to reveal important properties like hardness, tensile and compression strength in Al-Cu matrix alloy and its 2, 4, 6 and 8wt% hematite (Fe_2O_3) reinforcement composites. The results drawn were evident that for the same base alloy the squeeze cast had higher hardness, tensile and compression strength as compared to the gravity cast base alloy. Squeeze cast composites exhibit higher hardness tensile and compression properties by increasing weight percentage of reinforcements. The microphotographs of squeeze cast samples shows uniform dispersion of the reinforcements in MMCs with good bonding between the matrix and reinforcement.

IMAGE RECOGNITION USING AI CHATBOT

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ABSTRACT

The rapid advancements in artificial intelligence (AI) have revolutionized image recognition, especially through deep learning models. This project investigates the development of an AI-powered chatbot with integrated image recognition capabilities, aimed at improving image-based decision-making processes. The chatbot leverages Convolutional Neural Networks (CNNs), a powerful deep learning model, to accurately identify and classify images. Trained on a diverse dataset, the chatbot can recognize a wide range of objects, scenes, and patterns within images. Designed for user interaction, the chatbot allows individuals to upload images or describe visual content, which it then processes to deliver insightful, context-aware responses. This integration of AI image recognition with natural language processing demonstrates significant potential for automating tasks and enhancing user experiences in industries that rely heavily on visual data. The system offers faster, more accurate responses to image queries, ultimately improving operational efficiency. This work emphasizes the growing significance of AI in bridging communication and visual data analysis, and outlines the transformative possibilities of combining conversational interfaces with AI-driven image recognition for diverse applications in fields like healthcare, e-commerce, and security.

SMART VOTING SYSTEM

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ABSTRACT

With rapid growth in technologies the old voting methods can change to advanced voting methods. Online voting software is a modern solution that can efficiently and securely facilitate the voting process for various groups and organizations. The use of such software eliminates the need for physical polling stations, as voters can cast their ballots from anywhere with an internet connection. The benefits of using online voting software are many; it increases accessibility, saves time and resources, ensures accuracy and transparency, and supports more democratic decision-making process. Eligibility verification and accurate voter information are essential components of a successful online voting platform. While several countries have already implemented online voting software, this approach still faces challenges and limitations that must be addressed before universal adoption. In the following sections, we will deliver further into the various types of electronic voting methods and examine successful global examples of online voting. We will also discuss current trends and future developments in online voting software provide a comparison between online and traditional voting method.

RESPIRATORY DISEASE CLASSIFICATION USING MACHINE LEARNING

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ABSTRACT

This study explores the use of machine learning (ML) for classifying respiratory diseases such as asthma, COPD, and pneumonia. By leveraging clinical data, medical imaging, and physiological signals, ML models like decision trees, support vector machines, and neural networks can enhance early detection and diagnosis. The research highlights the importance of data pre-processing, feature extraction, and integration of diverse datasets, aiming to improve classification accuracy and assist healthcare providers in making timely clinical decisions. The study highlights the potential of ML in providing accurate, efficient, and cost-effective solutions for early detection and classification, improving patient outcomes and assisting healthcare providers in making informed clinical decisions. The challenges and future directions in the field, including the need for large, annotated datasets and model interpretability, are also discussed.

**ACCURATE DATA SENSING AND ALLOTMENT FOR DATA
SENDING ON NOISY ENVIRONMENT USING
HIGH FREQUENCY BS'S**

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ABSTRACT

The node localization problem in mobile sensor networks has big issues, so we implement this project for analysis the High bandwidth Base stations and allot the data. Global Positioning System (GPS) which can capture their position after resolve the High frequency Base station information then locate the data frequently. GPS or being manually configured by using Fuzzy logic Grid Prediction scheme. These fuzzy logic grid prediction algorithms can obtain good results to solve the Low Frequency Errors. We present a logic fuzzy grid prediction scheme, which optimizes low anchor density Base stations and place data on High Frequency band. Received signal strength (RSS) techniques reliably predict the actual distance between two base stations's for accurate data localization. This project is developed by using Visual studio Dotnet as front end.

CYBER HACKING BREACHES PREDICTION AND DETECTION USING MACHINE LEARNING

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ABSTRACT

The combination of physical processes, computational resources, and communication capabilities has driven major advancements in many dynamic applications of cyber-physical systems (cps). Cyberattacks, however, pose a serious risk to these systems. Cyber-attacks are smart and covert, in contrast to cyber-physical system defects that arise accidentally. Certain attacks, referred to as deception attacks, introduce erroneous data into the system by manipulating sensors or controllers, or by breaching cyber components and contaminating or introducing false information. The system may experience performance issues or become completely disabled if it is not aware that these attacks are occurring. Consequently, in order to recognize these kinds of assaults in these systems, algorithms must be modified. These systems generate large amounts of different, rapidly created data, so that is essential to use machine learning techniques to identify hidden trends and facilitate data analysis and review. This study models the CPS as a network of moving agents that work in union with among themselves. The model recognizes a leader agent and gives commands to the other agents in the network. The studies suggested approach makes use of deep neural network architecture for the detection stage, which should alert the system to the attacks presence in the early stages. Researchers have investigated isolating the misbehaving agent in the leader-follower system utilizing robust control methods within the network. In the proposed control strategy, the phase of assault detection is executed by a deep neural network, after The control system employs a reputation algorithm to identify and separate the agent exhibiting misconduct. Through experimental study, we can see that deep learning algorithms are able to detect assaults at a better performance level.

Keywords: Decision Tree, Random Forest, CatBoost, Adaboost, Logistic Regression, KNN, SVC.

SMARTEDUBOT: AI-POWERED MULTILINGUAL CHATBOT

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ABSTRACT

This research presents the Multilingual Assistant chatbot, an AI-powered tool designed to enhance student engagement and simplify administrative tasks in education. Built with Python and JavaScript, it offers multilingual support, voice interaction, FAQ management, appointment scheduling, and event reminders. Utilizing Natural Language Processing (NLP) and automation, the chatbot improves communication, efficiency, and inclusivity. It supports students from diverse linguistic backgrounds, fostering an accessible and engaging learning environment while reducing administrative burdens. This innovative AI solution highlights its transformative potential in modern education systems.

EXPLORING DL AND ML APPROACHES FOR BRAIN HEMORRHAGE DETECTION

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ABSTRACT

Brain hemorrhage refers to a potentially fatal medical disorder that affects millions of individuals. The percentage of patients who survive can be significantly raised with the prompt identification of brain hemorrhages, due to image-guided radiography, which has emerged as the predominant treatment modality in clinical practice. A Computed Tomography Image has frequently been employed for the purpose of identifying and diagnosing neurological disorders. The manual identification of anomalies in the brain region from the Computed Tomography Image demands the radiologist to devote a greater amount of time and dedication. In the most recent studies, a variety of techniques rooted in Deep learning and traditional Machine Learning have been introduced with the purpose of promptly and reliably detecting and classifying brain hemorrhage. This overview provides a comprehensive analysis of the surveys that have been conducted by utilizing Machine Learning and Deep Learning. This research focuses on the main stages of brain hemorrhage, which involve preprocessing, feature extraction, and classification, as well as their findings.

**DETECTION AND MITIGATION OF FAKE SOCIAL MEDIA
PROFILES: ENSURING AUTHENTICITY IN
DIGITAL INTERACTIONS**

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ABSTRACT

The proliferation of fake social media profiles has emerged as a critical challenge in maintaining trust and authenticity in digital interactions. These fraudulent accounts are often employed for malicious activities, including misinformation dissemination, identity theft, and social engineering attacks. This paper explores the detection and mitigation of fake social media profiles by leveraging advancements in artificial intelligence (AI), machine learning (ML), and behavioral analysis. We present an overview of existing detection methodologies, discuss their strengths and limitations, and propose a comprehensive framework that integrates advanced techniques for improved accuracy and scalability. By addressing both technical and social dimensions, this research aims to enhance the authenticity and reliability of online platforms.

SMART DOOR LOCK SYSTEM (SECURELOCKX)

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ABSTRACT

The proposed smart door lock system integrates advanced biometric technologies- eye recognition and fingerprint scanning—to ensure robust security and user convenience. The system employs an infrared-based iris or retina scanner to verify the user’s identity as the first authentication factor. Upon successful eye recognition, the user is prompted to enter a password on a keypad, where the system simultaneously verifies the fingerprint of the finger used to type the password. This dual biometric verification combined with a password enhances security by mitigating risks associated with traditional methods such as key theft or password hacking. Additionally, the system features real-time monitoring, encrypted data storage, and an alert mechanism for unauthorized access attempts. It is designed to be scalable for both residential and commercial applications, with potential integrations into broader IoT-based smart home systems. Challenges include cost-effectiveness, ensuring quick response times, and user-friendly calibration for diverse environments and lighting conditions.

AI-DRIVEN CROP DISEASE PREDICTION AND MANAGEMENT SYSTEM

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ABSTRACT

Crop diseases are a significant challenge in agriculture, leading to substantial losses when detected too late. Traditional methods, like visual inspection or hiring private researchers, are often expensive and inaccessible to small-scale farmers. This project aims to solve this issue using Artificial Intelligence (AI) to detect crop diseases at early stages by identifying patterns or color changes on leaves. We employ a Basic Convolutional Neural Network (CNN) model, trained to recognize early signs of diseases, such as leaf discoloration from nitrogen deficiency or spots caused by fungal infections like early blight. Once trained, the CNN model will be integrated into a web application, enabling farmers to upload images of affected crops and receive predictions along with preventive measures. For example, a farmer with early symptoms of bacterial wilt on their tomato plants can quickly diagnose the issue and take corrective action, such as adjusting irrigation methods or applying organic pesticides. This AI-powered tool provides a low-cost and accessible solution for farmers to detect diseases early and prevent crop loss. By democratizing access to advanced technology, this project offers a sustainable path toward improving agricultural practices, reducing financial risks, and enhancing food security for the future.

CYBERSECURITY WORKFORCE AND TALENT: A CRITICAL CHALLENGE

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ABSTRACT

The cybersecurity industry is struggling with a critical talent shortage, creating significant challenges for organizations and governments worldwide. As cyber threats become increasingly complex and spreading widely, the demand for skilled professionals has grown rapidly, yet the supply of qualified experts remains insufficient. This shortage is driven by factors such as rapid technological advancements, evolving cyberattack strategies, and the lack of targeted educational programs to prepare the next generation of cybersecurity professionals. As a result, organizations are struggling to protect sensitive data, secure critical infrastructure, and maintain business continuity. This paper explores the root causes of the cybersecurity talent gap, including the fast pace of technological change, the complexity of modern cyber threats, and the limited availability of specialized training programs. Additionally, it examines the broader consequences of this shortage, including increased cybersecurity risks, business disruptions, and potential threats to national security. The paper also presents potential solutions, such as expanding cybersecurity education, promoting diversity within the field, and leveraging automation and artificial intelligence to support human experts. Addressing the cybersecurity workforce shortage is crucial for ensuring the safety and resilience of digital infrastructure and protecting against increasingly advanced cyberattacks. A coordinated effort from educational institutions, industry leaders, and governments is essential to bridge this critical gap and secure a robust cybersecurity future.

DDOS PROTECTION SYSTEM FOR CLOUD ARCHITECTURE AND TOOL

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ABSTRACT

This literature survey reviews studies related to cloud computing says that, many organizations are using Cloud for hosting their web applications. The attackers can try to attack these webservers for achieving Denial of Service attack. Specifically, Distributed Denial-of-Service (DDoS) attack is a malicious attempt to disrupt the normal traffic of a targeted server, service or network of Cloud infrastructure by overwhelming the target or its surrounding infrastructure with a flood of internet traffic. DDoS attacks achieve effectiveness by utilizing multiple compromised computer systems as sources of attack traffic. Exploited machines can include computers and other networked resources. Therefore, it is essential to develop appropriate security tools to counter and protect against these attacks.

Description: The most obvious symptom of a DDoS attack is that a website or service suddenly.

INTELLIGENT ATTENDANCE SYSTEM BY FACE RECOGNITION

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ABSTRACT

Face recognition attendance system that combines Convolutional Neural Networks (CNN) and DenseNet architecture to achieve highly robust and efficient attendance management. The proposed system utilizes a CNN-based face detection algorithm to locate and extract faces from input images. Once the faces are detected, the system applies a DenseNet architecture for feature extraction. DenseNet is known for its densely connected convolutional layers, which promote feature reuse and enable the extraction of rich and discriminative features. By leveraging the power of DenseNet, the system can capture intricate facial details, such as shape, and spatial relationships, resulting in robust facial feature representations. The system's training phase involves training the CNN and DenseNet models on a large dataset of labeled facial images. The face recognition attendance system offers numerous benefits, including high accuracy, real-time performance, and improved security. It eliminates the need for manual attendance marking, reduces administrative efforts, and mitigates issues such as proxy attendance.

REVIEW OF GIGSYNC-A FREELANCING PLATFORM

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ABSTRACT

The shift toward online freelance platforms has transformed how professionals engage with work, offering flexibility and autonomy while presenting challenges in terms of trust, collaboration, and efficiency. This study investigates the dynamics of virtual community trust, work engagement, and person-job fit within the context of online freelancing platforms, providing insights into how these factors influence work satisfaction and productivity. By analyzing the interplay between these elements, the study highlights strategies to enhance freelancer experiences and improve platform functionality for long-term sustainability.

**ANALYSIS OF STUDENTS BEHAVIOR AND ATTITUDE
TOWARDS ARTIFICIAL INTELLIGENCE TOOLS AND
TECHNOLOGIES IN HIGHER EDUCATION**

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ABSTRACT

In this paper, my main objective is to contribute to the existing work on the impact of artificial intelligence (AI) in higher education. Various constraints that affect the behavior and attitude of students toward the use of AI in higher education are discovered in this paper. Quantitative approach using a massive range of adopting theories and models, that includes the integrated theory of acceptance and use of AI technology model. Hypotheses is formulated and verification is performed with the help of conceptual model. I also tried to collect the survey of around 300 students for this paper. Relationship between dependent and independent variables were determined by the help of the structural equation model (SEM). However, it was very surprising to know that instead of apparent risk that impact student's attitude in a negative manner, student attitude and behavioral intention to use the concept of AI in education is significantly increasing that is based on various factors of expected performance and favorable conditions. Also, the result shows that attitude towards AI use in higher education is not contributed by effort expectancy in a significant manner. Paper is concluded with limitation in research work.

ADVANCED AUTOMATION OF THE HOME WITH LIGHT FIDELITY

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ABSTRACT

Li-Fi, or light fidelity, is a new technology that communicates by using the visible light spectrum. One of the most practical methods to manage the many technological gadgets we use in our daily lives is through home automation. The usage of Li-Fi technology, which includes light-emitting diode (LED) bulbs, as a connectivity method is suggested in this study. Data is transmitted as signals via an optical wireless channel using the light spectrum. This concept can be realized as a cloud-connected Android application. With the help of this smartphone app, any device in a home may be watched over and managed. Using this program, a user can switch any device's state from ON to OFF. The hardware attached to the light source receives a message in the form of a binary sequence after modifications are made in the cloud. Following translation, the message to switch the device between the ON and OFF states is acquired along with the identity of the device that has to be managed. Since the data stays inside the four walls, this message is transmitted securely utilizing visible light communication. The original message is obtained when hardware on the receiving end detects the source of the blinking light and converts the blinks into a binary sequence. Following completion of the required action, the device updates the cloud. The user's phone and Android application further reflect this. Because the identity of the gadget and the light source are necessary to modify it, attackers cannot readily breach this system.

**DYNAMIC SECURITY AND RE-AUTHENTICATION FOR NEXT
GENERATION NETWORK USING IKEV2**

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ABSTRACT

Currently BTS supports IKEv2 rekeying based on CREATE_CHILD_SA (which does not lead to re-authentication). Alternatively, IKEv2 rekeying could optionally be based on IKE_SA_INIT exchange. This alternative would lead to (re-)authentication but in fact means a “break-before-make” approach, creating a new IKE SA and CHILD SA, and thus packet loss at every rekeying (RFC5996, TS 33.210). This paper describes an IKEv2 improvement for re-authentication with respect to IKE rekeying.

IMPACT OF SCIENTIFIC PRANAYAMA ON COVID AFFECTED POPULATION AND HEALTH BENEFITS

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ABSTRACT

Yoga is an ancient knowledge of Indian origin being practiced throughout worldwide by mankind from the time immemorial. It has been considered as a way of leading happy and blissful life. Sage Patanjali is Father of Yoga and composed 195 Yoga Sutras – slokas as Astanga Yoga Sutras. These sutras are widely practiced by many. The fourth limb of Astanga Yoga Sutras is Pranayama. Pranayama – Yogic breath regulation is considered as an essential component of Yoga, which is said to influence physiological systems of human body in various ways involving different organs-respiratory, circulatory, digestive, nerves and brain, directly or indirectly impacting the conscious and subconscious mind there by influence the health and wellness. Covid 19 a new virus strain spread as a pandemic worldwide, infected humans as host affecting nasal region, throat, bronchial areas and lungs. The spread of the covid virus in India extended as wave 1, 2 and 3 lead over a period of two and half years from March, 2020 onwards. The situation was uncontrollable at one point of time, lead to the unexpected mortality of human population worldwide. Advanced scientific research lead to the discovery of vaccines-covaxin and covishield in India and administered in two phases – Dose 1 and Dose 2 to majority of the adult population. Vaccination in India and worldwide has drastically improved the situation lead to overall stability of the health condition of the population. In quarantined population of covid affected, though recovered from the diseases, immunity related issues cropped up leading to – body pain, headache, psychological issues, depression, anxiety, fear, fatigue, lack of feeling of freshness in mind and body, irregular sleep cycles and disturbances. In a recent research study attempts have been made to observe the impact and therapeutic approach of a few selected pranayama techniques in a scientific and methodical way on a group of covid affected individuals. Awareness about pranayama and advantageous effects of yogic breathing on the neuro-cognitive, psycho-physiological, respiratory, biochemical and metabolic functions were explained to the selected group through direct interaction in class room environment and also through online mode. The group included working professionals both males and females aged between 40-60 yrs. Counseling sessions were conducted in groups and individually as well. Suitable pranayama techniques (bhastrika, ujjayi, anuloma-viloma, udgeetha and pranava/meditation) were demonstrated and made to practice initially for three days, followed by observation and counselling. The prescribed therapeutic health package was implemented on the selected participants. The methodical and scientific approach of prescribed pranayama techniques on covid infected population with critical observation, analysis and conclusion through counseling and discussions on therapeutic

impacts has drastically improved overall health condition and wellbeing of the participants. The yogic breathing could be considered safe, when practiced under guidance of a trained teacher. Though the original knowledge is taken from ancient literature, the modern technique of practice of scientific pranayama has paved a way to work on the areas that the regular practice of scientific pranayama techniques may be a parallel solution for therapeutic health of the people (for many ailments in the body) and when tried along with the specific medical system (allopathic, ayurvedic, homeopathy, siddha, unani or any other system) of treatment being followed for bronchial and respiratory diseases and overall wellbeing.

DETECTION OF FACE-SWAP BASED DEEP FAKE VIDEOS

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ABSTRACT

With the rapid advancement of deep learning technologies, the creation of face-swap deepfake videos has become increasingly prevalent, posing significant threats to information integrity and privacy. This project aims to develop an AI/ML-based solution to effectively detect face-swap deepfake videos, distinguishing them from genuine content. Our system leverages a convolutional neural network (CNN) and advanced deep learning techniques to analyze subtle artifacts and inconsistencies often introduced during face-swapping. By training on diverse datasets of both real and manipulated videos, the model learns to identify features such as irregular facial expressions, lighting mismatches, and boundary anomalies. The solution is designed to be scalable and robust, with a user-friendly interface for practical applications, including media verification, cybersecurity, and content moderation. Experimental results demonstrate a high detection accuracy rate and reliability against various face-swap manipulation methods. This research contributes to ongoing efforts in combating misinformation and improving digital content authentication.

RAILWAY TRACK CRACK & OBJECT DETECTION USING IOT

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ABSTRACT

Most of the train accidents occur due to the breakage in track and the animal passage in the railway track (example: elephant, cow, etc...). There are many methods used by Indian railway to avoid train accidents. But Indian railway struggles a lot to avoid it. Techniques like Automatic train protection system, Ultrasonic flaw detection system etc. In order to overcome this problem, we are using the few techniques to detect the breakage in track and detecting animals or any obstacle like small stones and rebars before entering the track. The sensors like Ultrasonic, Infrared sensor are used in the detection and prevention process. The IR sensor is used in the detection of crack in tracks. The ultrasonic is used in the detection of animals and obstacles. It is controlled by the Arduino mega and application software.

ELEVATEU: AN INTELLIGENT MENTORSHIP AND CAREER GUIDANCE ECOSYSTEM

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ABSTRACT

ElevateU project aims to develop an innovative mentoring platform designed to bridge the gap between aspiring candidates and experienced mentors across various industries. With India's demographic advantage and an expanding job market, candidates face an increasing need for career guidance and skill development. This platform will enable mentees to connect with mentors, senior industry leaders and subject matter experts who can offer valuable insights, advice, and referrals. The core features of the platform include an automated calendar booking system that simplifies scheduling by matching mentor availability with candidate preferences, along with an embedded video call functionality to facilitate seamless virtual mentoring sessions. Additionally, an integrated chat feature will allow real-time sharing of resources during discussions. The platform will ensure ease of use, security, and reliability, making it accessible for all users. By creating a space for meaningful interactions, the platform will help enhance employability and skill development, equipping candidates with the knowledge they need to succeed in an ever-evolving job market. Through this mentoring solution, students and professionals can access personalized career guidance, thereby fostering growth, innovation, and long-term career success.

VIRTUAL TELEMEDICINE SYSTEM FOR REMOTE HEALTH MONITORING

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ABSTRACT

The “Virtual Telemedicine System for Remote Health Monitoring” is a technology-driven solution designed to address the challenges of healthcare accessibility, especially in remote and underserved areas. This system integrates Internet of Things (IoT) devices to continuously monitor patients. Vital health parameters such as heart rate, blood pressure, and temperature. The collected data is transmitted to a cloud platform, enabling healthcare providers to remotely track and analyze patient health in real-time. This approach not only reduces the need for frequent physical consultations but also ensures proactive care, particularly for patients with chronic conditions. The system enhances the efficiency and affordability of healthcare by leveraging telecommunication technologies and offering seamless virtual consultations. With a focus on data security and patient privacy, the project aims to provide a scalable, cost effective, and reliable healthcare solution that bridges the gap between patients and healthcare professionals, ultimately improving health outcomes and quality of care.

AI- HEALTHCARE ASSISTANT

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ABSTRACT

The AI Healthcare Assistant is an innovative platform designed to revolutionize healthcare management by leveraging advanced artificial intelligence and modern web technologies. This system enables users to receive accurate disease predictions based on symptoms they provide, along with personalized suggestions for precautions, diet, medication, and workout plans. A conversational AI module, integrated through APIs, facilitates real-time interaction with patients, enhancing user experience and engagement. The platform extends its functionality to include a comprehensive hospital management system, allowing users to book doctor appointments online, thus bridging the gap between patients and healthcare providers. Developed with a robust tech stack, the project utilizes Spring Boot for the backend, ensuring seamless data processing and security; Flask for hosting the trained AI model, providing accurate and efficient predictions; and React for the frontend, delivering an intuitive and responsive user interface. This project represents a significant step toward digitalizing healthcare services, making them accessible, efficient, and user-friendly. It has the potential to alleviate challenges in traditional healthcare systems, ensuring timely medical attention and personalized care for patients.

INDIAN SIGN LANGUAGE TO MULTILINGUAL TEXT USING DEEP LEARNING

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ABSTRACT

The proposed project is to develop a multilingual Indian Sign Language recognition system, which can translate the sign gestures into text in English, Kannada, and Hindi. The proposed system utilizes computer vision along with deep learning techniques. For this, a Convolutional Neural Network (CNN) has been used for feature extraction and classification. Initially, the dataset is pre-processed where video frames or images are extracted, augmented, and normalized. The model further applies CNN layers in analyzing the spatial patterns in the gestures and finally a fully connected layer in gesture classification. In order to achieve accessibility, all the identified gestures are translated to their corresponding meanings in the three languages with a dictionary-based translation method. The model was trained using TensorFlow/Keras. With accuracy and loss, performance optimization is achieved through several epochs. The system addresses the language barrier by allowing the real-time sign language translation, supporting Deaf and Hard-of-Hearing people. As multilingual output capabilities are built-in, the project provides room for inclusivity and adds an essential tool to communicating, particularly in educational, social, and professional circles. Preparing the appropriate datasets along with training models is something that could allow scalable implementations throughout diverse settings and allow smoother, natural interaction between users and sign language users in that environment.

BONE FRACTURE DETECTION AND CLASSIFICATION SYSTEM

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ABSTRACT

The accurate classification of bone fractures plays a pivotal role in orthopaedic diagnosis and treatment planning. This study investigates the integration of deep learning techniques in fracture classification, specifically focusing on the analysis of bone fractures using X-ray images. Leveraging convolutional neural networks (CNNs), a subset of deep learning algorithms, our research aims to develop an automated system for precise fracture classification based on X-ray imaging data. The inherent capabilities of CNNs to extract nuanced features from medical images are harnessed to discern subtle details in fracture patterns, thereby enhancing diagnostic accuracy. The study addresses challenges associated with diverse fracture types and variations in X-ray image quality, employing deep learning methodologies to overcome these obstacles. The proposed model seeks to streamline the fracture classification process, offering a standardized and efficient approach in orthopaedic diagnostics.



About the Conference

The Conference focuses on exploring cutting-edge engineering solutions to address global sustainability challenges. Objectives of the conference is promoting innovation in sustainable engineering, facilitating knowledge sharing among researchers and experts fostering collaborative networking across academia and industry, raising awareness about sustainability issues and addressing key challenges through practical solutions. Outcomes expected from the conference are the generation of innovative solutions, strengthened research collaborations, the formulation of actionable strategies, advocacy for supportive policies, increased awareness of sustainable practices, and enhanced capacity building among students and professionals.

About the College

City Engineering College was established under Jayanagar Education Society by Dr.K.R Paramahamsa, Chairman in the year 2001. The College provides degrees in fields such as Computer Science, Electronics and Communication, Civil, Mechanical and Electrical Engineering. The College emphasizes Quality Education, Research & Practical Learning through State of the Art Facilities, Modern Labs and Industry Tie-ups. The College has several departments such as CSE, ISE, AI, ML, ECE, Civil, ME, CSE (IoT), BBA, BCA, MCA, MBA along with Ph.D. Programme. With a focus on Holistic Development, City Engineering College prepares Students for Successful Careers in the ever-evolving Technology and Engineering Sectors.



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