PROCEEDINGS OF

International Conference on Veracity Research in Scientific Computation and Engineering Trends

ICVRSCET 2023

Organized by

V.R.S.

COLLEGE OF ENGINEERING AND TECHNOLOGY

Accredited by NAAC & An ISO 9001:2008 Recertified Institution

Arasur - 607 107, Villupuram District, Tamilnadu, India.

PROCEEDINGS OF INTERNATIONAL CONFERENCE ON VERACITY RESEARCH IN SCIENTIFIC COMPUTATION AND ENGINEERING TRENDS

(ICVRSCET - 2023)

26th April 2023

Organized by

V.R.S. COLLEGE OF ENGINEERING AND TECHNOLOGY

Arasur - 607 107, Villupuram District,

Tamil Nadu, India.

MESSAGE FROM

V. R. S. COLLEGE OF ENGINEERING AND TECHNOLOGY

Dear Colleagues and Guests,

A philanthropic initiative to significantly contribute to rural development through engineering education led to the establishment of V.R.S. College of Engineering and Technology, Arasur, Villupuram District, Tamil Nadu, India, in 1994. Located in a serene rural environment, the institution has consistently aimed to empower students with quality education and essential facilities.

It is with immense pleasure that we welcome you to the **3rd International Conference on Veracity Research in Scientific Computation and Engineering Trends (ICVRSCET-2023)**. The core aim of ICVRSCET-2023 is to offer a global platform for academicians, researchers, scientists, and students to explore the forefront of scientific computation and engineering trends. This forum encourages discussions on emerging challenges, latest technological advances, and multidisciplinary innovations in the field of science and engineering.

The conference features parallel sessions and distinguished keynote addresses from leading experts across the globe. It will also serve as a vibrant stage for young researchers and doctoral scholars to present their pioneering work and engage in collaborative dialogue.

We are confident that ICVRSCET-2023 will serve as a significant milestone in promoting innovation and excellence in scientific research and its practical applications. We extend our warm hospitality and are certain that participants will enjoy the intellectually enriching sessions, warm hospitality, and serene ambiance of V.R.S. College of Engineering and Technology.

We wish you all a successful and memorable conference experience.

V.R.S. College of Engineering and Technology
Arasur, Villupuram District, Tamil Nadu, India.

ABOUT THE CONFERENCE

The *International Conference on Veracity Research in Scientific Computation and Engineering Trends (ICVRSCET-2023)* is a biennial event dedicated to fostering high-quality research by uniting academicians, industry professionals, researchers, and students from diverse disciplines. The conference serves as a global platform to exchange knowledge, present advancements, and discuss innovative solutions in scientific computation and engineering.

ICVRSCET-2023 covers a broad spectrum of topics including Artificial Intelligence, Machine Learning, Data Science, IoT, Smart Systems, and Sustainable Technologies. The interdisciplinary nature of these domains has led to breakthroughs in addressing complex real-world challenges and driving technological innovation. This event provides an ideal environment for participants to share novel ideas, engage in collaborative discussions, and establish long-term research connections with peers from around the world.

SCOPE OF CONFERENCE

The primary aim of the *International Conference on Veracity Research in Scientific Computation and Engineering Trends (ICVRSCET-2023)* is to provide a platform for academicians, research scholars, and industry professionals to explore and address the pressing challenges in emerging scientific and engineering technologies.

The conference facilitates the dissemination of cutting-edge research and promotes interaction among experts across various domains. It emphasizes knowledge transfer on recent innovations, trends, methodologies, and their practical applications, thereby enhancing the technical competencies of participants and contributing to global research and development initiatives.

ABOUT VRSCET

V.R.S. College of Engineering and Technology was founded in 1994 under the auspices of the S.P.S Educational Trust. The college is approved by the All-India Council for Technical Education (AICTE), New Delhi, and is affiliated with Anna University, Chennai. It holds accreditations from NAAC, Bengaluru [previously NBA, New Delhi], and is ISO 9001:2008 certified. The institution is governed by the Board of Governors, with Mrs. Vijaya Muthuvannan serving as Chairperson, Mr. S. R. Ramanathan as Secretary & Correspondent, and Mr. N. Muthuvannan as Director. The overall administration is overseen by Er. M. Saravanan.

With a focus on applied research and innovative education, V.R.S.C.E.T has significantly contributed to the socio-economic development of the nation. Scientific exploration and invention have led to real-world solutions that enhance national progress. As the nation faces evolving challenges, the role of academic institutions in shaping socio-economic resilience becomes increasingly crucial.

Located in a rural setting, the college is dedicated to providing quality technical education and career-oriented programs that bridge theory with practice. With modern infrastructure and a commitment to academic excellence, VRSCET supports a wide spectrum of disciplines and career paths.

The institution emphasizes long-term educational strategies to expand and enrich its curriculum and co-curricular programs. By doing so, it continues to empower students to emerge as successful engineers, researchers, scientists, entrepreneurs, and leaders who are well-equipped to contribute to national and global progress.

ORGANIZING COMMITTEE

CHAIRMAN

Dr. N. ANBAZHAGHAN, M.E., Ph.D., (Principal)

V.R.S College of Engineering and Technology, Arasur – 607 107, Villupuram District.

CONVENOR

Dr. J. JOSEPH IGNATIOUS, M.E., Ph.D., (Professor)

Department of Electronics and Communication Engineering,

V.R.S College of Engineering and Technology, Arasur, Villupuram District.

CO- CONVENORS

Dr. G. PERUMAL, M.E., Ph.D., (HoD)

Department of Mechanical Engineering,

V.R.S College of Engineering and Technology, Arasur, Villupuram District.

Prof. P. KARUNANITHI, M.Tech. (HoD)

Department of Computer Science and Engineering,

V.R.S College of Engineering and Technology, Arasur, Villupuram District.

MEMBERS

Mr. G. SADIQ BASHA, M.Tech., (HoD)

Department of Electronics and Communication Engineering,

V.R.S College of Engineering and Technology, Arasur, Villupuram District.

Mr. S. ARUNPANDIYAN, M.E., (HoD)

Department of Electrical and Electronics and Engineering,

V.R.S College of Engineering and Technology, Arasur, Villupuram District.

Mr. P. VIJAYAKUMAR, M.E., (HoD)

Department of Civil Engineering,

V.R.S College of Engineering and Technology, Arasur, Villupuram District.

CO-ORDINATOR

Mr. K. RAMESH, M.E., (Ph.D.,)

Department of Computer Science and Engineering,

V.R.S College of Engineering and Technology, Arasur, Villupuram District.

EDITORIAL BOARD – NATIONAL

EDITORIAL BOARD – INTERNATIONAL

TABLE OF CONTENTS

IC23-014: ENHANCED NEURAL NETWORK ALGORITHM FOR SPAM DETECTION IN TWITTER DATA

[1]DHIVYA R, [2]GUNASELVI J, [3]USHARANI S
IFET COLLEGE OF ENGINEERING, INDIA

ABSTRACT:

As online social networks gain widespread popularity, platforms like Twitter have become major targets for spammers to spread malicious content. Most existing spam detection methods focus on identifying and blocking spam accounts. However, spammers can easily create new accounts and resume their activities, emphasizing the need for robust tweet-level spam detection techniques with real-time filtering capabilities. Traditional machine learning models rely on handcrafted features, whereas recent advancements in deep learning have demonstrated significant success in natural language processing (NLP) tasks. To utilize the strengths of both approaches, we propose an ensemble-based spam detection framework for tweets. Our method combines multiple deep learning models based on Convolutional Neural Networks (CNNs) with a feature-based classification model. The ensemble consists of five CNN models trained with different word embeddings (GloVe, Word2Vec) and a feature-based model that incorporates textual, user, and n-gram attributes. A multilayer neural network functions as a meta-classifier to effectively merge deep learning and traditional feature-based models. Experimental evaluations confirm that our approach improves spam detection accuracy and offers a more robust solution against evolving spam tactics.

Keywords: Spam Detection, Social Media Networks, Twitter Spam Filtering, Deep Learning, Convolutional Neural Networks, Feature-Based Classification.

IC23-102:QUALITY-OF-SERVICE-BASED NUTRIENT ALLOCATION USING A DIGITALIZATION STRATEGY

[1]DR. HABCHI YASSINE
DEPARTMENT OF ELECTRICAL ENGINEERING,
NAAMA CENTRE UNIVERSITY, ALGERIA
habchi@cuniv-naama.dz

ABSTRACT:

Food is a fundamental necessity for all human beings, providing essential energy for the body. However, in recent times, the presence of chemical substances in food has increased, leading to various health issues. Children are particularly vulnerable to the effects of unhealthy food consumption. This study proposes a system for assessing food quality using a pH sensor. The pH sensor determines the pH value of food and detects bacterial contamination. This research aims to assist the government in monitoring food quality in restaurants, displaying results on a centralized server, and sending pH value updates via GSM messaging. Additionally, the system enables the sharing of restaurant locations for better food safety management.

Keywords: Food Quality, pH Sensor, Bacterial Contamination, Government Monitoring, Restaurant Safety, GSM Messaging, Location Tracking.

IC23-198: AN IoT-BASED SYSTEM FOR PREDICTING MECHANICAL FAILURES IN VEHICLE AND OPTIMIZING REPLACEMENTS

[1]DR. MUHAMMAD SAJJADUR RAHIM, [2]DR. NOWSHAD HASAN
DEPARTMENT OF INFORMATION AND COMMUNICATION ENGINEERING,
UNIVERSITY OF RAJSHAHI, BANGLADESH.
sajid_ice@ru.ac.bd

ABSTRACT:

With the growing need to monitor mechanical failures in vehicles to enhance customer safety and prevent potential accidents, IoT-based solutions have gained significant attention. However, vehicle failures can occur due to various factors, necessitating an efficient approach for rapid detection and resolution of critical issues. This study proposes an IoT-based framework designed to enable quick and effective recovery from common mechanical failures. The system utilizes a network of sensors and microcontrollers (MCs) to continuously track key vehicle parameters. The collected data is analyzed using data mining techniques to predict potential failures in advance. Experimental results demonstrate that the proposed approach achieves high accuracy in failure prediction, contributing to improved vehicle safety and maintenance.

Keywords: Mechanical Failure Prediction, Vehicle Safety, IoT-Based Monitoring, Sensor Data Analysis, Data Mining.

IC23-057: CUSTOMER PERCEPTION AND SATISFACTION IN MOBILE BANKING

[1]LEONARDO DE LELLIS ROSSI, [2]GABRIEL JOSÉ PELLISSER DALALANA
DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING
UNIVERSITY OF CAMPINAS, BRAZIL
l261900@dac.unicamp.br

ABSTRACT:

Advancements in banking, information, and telecommunication technologies have significantly transformed the financial sector, particularly the banking industry, by reducing transaction costs and improving information accessibility. Mobile banking (M-banking) has emerged as a modern platform that allows customers to manage their bank accounts remotely. Banks offer M-banking as a cost-effective alternative to traditional banking services. This study aims to assess customer satisfaction with mobile banking services. Primary data was gathered from 107 customers using a structured questionnaire. The sample was selected through a convenience sampling technique. The collected data was analyzed using percentage analysis, weighted average ranking, and the chi-square test. Findings reveal that most customers primarily utilize mobile banking for peer-to-peer (P2P) payments and fund transfers. The chi-square test further establishes a significant relationship between customer satisfaction levels and factors such as age, educational background, and monthly income.

Keywords: Mobile Banking, Customer Satisfaction, Financial Technology, Banking Services, P2P Payments, Fund Transfers, Chi-Square Analysis.

IC23-176: ENHANCING MANET EFFICIENCY BY REDUCING ROUTING OVERHEAD USING THE ARPRP PRINCIPLE

[1]VINODHINI B, [2]DR MARIKKANNAN M, [3]DR KARTHIK S
SNS COLLEGE OF TECHNOLOGY, INDIA
vinodhini.raja@gmail.com

ABSTRACT:

A Mobile Ad Hoc Network (MANET) consists of dynamic nodes that form a temporary network without relying on fixed infrastructure. Due to the rapid movement of mobile nodes, frequent link failures occur, leading to repeated path disruptions and route rediscovery. Traditional broadcasting mechanisms used for route discovery often cause broadcast storm issues. To address this, the Adjacent Rebroadcast Probabilistic Rebroadcast Protocol (ARPRP) is employed to manage route discovery efficiently, significantly reducing routing overhead. In MANET, node movement and departure create continuous mobility, impacting network stability. As MANET depends on intermediate nodes for multi-hop data transmission, a faulty node within an established route can lead to path failures, disrupting data flow and degrading overall system performance. The proposed system introduces a path recovery mechanism to handle route failures using the AMRIS (Adaptive Multicast Routing with Increased Scalability) protocol. AMRIS minimizes retransmissions, reduces delays, improves packet delivery ratio, and enhances throughput. The resulting improvements in network efficiency and performance are observed.

Keywords: AMRIS Protocol, MANET, ARPRP Protocol, Routing Overhead Reduction, Path Failure, Path Recovery, Multicast Routing.

IC23-039: REMOTE SENSING-BASED HUMAN PRESENCE DETECTION IN RESTRICTED AREAS

[1]DR SHABIR HUSSAIN, [2]MOEEN AL-MAKHLAFY, [3]OSCAR FAMOUS DARTEH
INSTITUTE OF BIOPHARMACEUTICAL AND HEALTH ENGINEERING,
ACCRA TECHNICAL UNIVERSITY, CHINA
shabir.nicaas@gmail.com

ABSTRACT:

In today's digital era, where internet-based systems are rapidly expanding and valuable assets are widely acquired, the occurrence of manmade disasters is also increasing. These disasters include theft, smuggling, human trafficking, targeted killings for financial gain, and bomb blasts. Such activities are often orchestrated by groups rather than individuals and are primarily planned in remote or forested areas with minimal or no human presence. Manually monitoring these regions is impractical, as it requires significant human resources and constant deployment. Additionally, criminals frequently change locations, making it difficult to predict and monitor specific areas. Therefore, an automated system is essential for detecting human presence in such areas to prevent potential threats without direct human intervention, thereby reducing operational costs. This paper explores various human presence detection mechanisms and proposes a model based on Microwave Doppler radar technology sensors. The proposed system enables real-time monitoring and transmits alerts to relevant authorities for prompt action.

Keywords: Human Presence Detection, Doppler Radar, Remote Sensing, PIR Sensor, UWB Sensor, Automated Monitoring, Threat Prevention.

IC23-121: WEB-BASED OPINION MINING AND SENTIMENT ANALYSIS OF AUTOMOBILE REVIEWS

[1]T P N NITHIN, [2]E R R NEETTISHA, [3]S KEERTHANA SRI, [4]P POONKODI
SNS COLLEGE OF TECHNOLOGY, INDIA

ABSTRACT:

Data has transformed human lifestyles in this technologically advanced world and continues to do so. It serves as evidence of human evolution, reflecting the ever-changing perspectives of individuals. Data also provides analytical insights and predictive solutions by utilizing various techniques such as data mining, big data, and data analytics. With the growing volume of data across multiple domains, machine learning has emerged as a key technology. This paper focuses on enhancing the quality standards of automobile products based on user feedback. The approach involves collecting product reviews from a web application portal as textual data. This data is then processed using sentiment analysis algorithms and natural language processing, a machine learning technique designed to analyze, extract, and predict insights from unstructured data. The processed data generates a sentiment score that categorizes the feedback into positive, negative, or neutral sentiments for various product parameters.

Keywords: Data, Machine Learning, Data Analytics, Sentiment Analysis, Natural Language Processing, Web Application, Automobile Reviews, Product Feedback.

IC23-189: SOCIAL INTERACTION-BASED STRESS DETECTION

[1]ELEGBELEYE FEMI ABIODUN, [2]PROSPER HOEYI
WALTER SISULU UNIVERSITY, SOUTH AFRICA
felegbeleye@wsu.ac.za

ABSTRACT:

Psychological stress refers to the emotional and mental responses individuals experience in stressful situations, posing a significant threat to human health. Studies indicate that stress levels are closely linked to social interactions on social media. This paper utilizes a dataset to analyze the correlation between user stress and social interactions. The proposed model detects stress levels using a graphical representation and sends an alert message along with relaxation techniques if the user is highly stressed. Experimental results show that the proposed model enhances stress detection performance by 10-13%. Unlike existing models, this approach dynamically considers the number of posts for stress evaluation.

Keywords: Stress Detection, Social Media, Social Interaction, Graph, Alert Message, Relaxation Techniques, Dynamic Technique.

IC23-045: AN INTELLIGENT ONLINE PORTAL FOR REPORTING AND RESOLVING CIVIC COMPLAINTS

[1]S PRAVEENA, [2]K RATHISH, [3]K T NIKILA
SRI ESWAR COLLEGE OF ENGINEERING, INDIA
praveena2807@gmail.com

ABSTRACT:

Reporting Road or community-related issues has become a complex process for individuals. People must go through lengthy procedures to report problems such as road damage, street cleaning, potholes, overflowing trash bins, and damaged light posts—essentially, any issue under the jurisdiction of the municipal district. Even after reporting, there is no assurance that the complaints will be addressed by the relevant authorities, leaving many problems unresolved. To simplify this process, we propose an online application that enables individuals to report issues directly to the appropriate authorities based on their location. Complaints are submitted via a mobile application, allowing users to instantly report infrastructure defects, transportation concerns, environmental cleanliness issues, or other daily life disruptions. Through this online portal, people can share, discuss, and have their problems resolved efficiently by the concerned authorities.

Keywords: Complaint, Municipality, Online Application, Mobile Application, Infrastructure, Transportation, Environment Cleanliness, Community Issues, Reporting System.

IC23-009: IoT-ENABLED SMART VEHICLE AUTOMATION AND ACCIDENT ALERT SYSTEM

[1]M MEKALA, [2]G NITHYA, [3]P RENUKADEVI
PAAVAI ENGINEERING COLLEGE, INDIA

ABSTRACT:

With increasing vehicle speeds, accidents are becoming more frequent, often resulting in loss of life due to minor driving mistakes, especially in school zones, hilly areas, and highways. To prevent such incidents and alert drivers, highway departments place signboards indicating speed limits and accident-prone areas. However, drivers may overlook these signs or fail to reduce their speed, increasing the risk of accidents, particularly in high-traffic areas. Many drivers drive recklessly without considering traffic regulations, making it essential to notify them about speed limits and hazardous zones. This can be achieved through an automated system using embedded technology and sensors. This research focuses on automatic speed control of vehicles by detecting accident-prone zones. The primary objective is to develop a smart vehicle security controller that ensures vehicle safety by monitoring and controlling speed in critical areas. The proposed system utilizes embedded technology and sensors such as IR sensors, ultrasonic sensors, alcohol sensors, and vibration sensors to enhance safety. Additionally, the system provides real-time alerts to drivers via IoT to prevent severe accidents in restricted zones.

Keywords: Smart Vehicle, IoT, Accident Alert, Speed Control, Embedded System, Sensors, IR Sensor, Ultrasonic Sensor, Alcohol Sensor, Vibration Sensor.

IC23-167: ANALYSIS OF WASTE REDUCTION IN RCC SILOS USING POLYURETHANE LINING

[1]SAM MASUNDA, [2]LEO MATARUKA
DEPARTMENT OF ELECTRONICS AND TELECOMMUNICATIONS,
UNIVERSITY OF ZIMBABWE, ZIMBABWE
smasunda@hit.ac.zw

ABSTRACT:

Elevated reinforced concrete (RCC) silos play a crucial role in various production industries due to increasing production demands. In particular, thermal power plants generate large quantities of waste, such as fly ash, which requires efficient storage solutions. To meet the storage requirements of power plants, silos must be carefully designed and analyzed, as they are high-rise structures subjected to significant loads. RCC silos with greater heights and partially tapered sections are more vulnerable to wind, seismic, and temperature effects compared to fully tapered silos, which exhibit minimal displacement. Polyurethane lining is an effective solution for enhancing silo efficiency by facilitating smooth operations and minimizing fly ash wastage. Additionally, polyurethane lining helps prevent abrasion, ensuring durability and improved performance of the silos.

Keywords: RCC Silos, Thermal Power Plant, Fly Ash, Polyurethane Lining, Silo Efficiency, Abrasion Prevention, Structural Analysis.

IC23-081: EXPERIMENTAL STUDY ON LIGHTWEIGHT FOAMED CONCRETE

[1]R KAMALESHWARI, [2]P SARANYA
IFET COLLEGE OF ENGINEERING, INDIA
kamaleshwarivasuraj@gmail.com

ABSTRACT:

Foam concrete is a type of aerated lightweight concrete that does not contain coarse aggregates and is classified as an aerated mortar. It is produced by incorporating pre-formed foam into a slurry, where the foam generates air voids within the cement-based mixture. This study investigates the partial replacement of cement with Palm Oil Fuel Ash (POFA) and Rice Husk Ash in the production of foamed concrete. Experiments were conducted by replacing 5% and 10% of POFA and 10% and 15% of Rice Husk Ash with Portland pozzolan cement. The results indicate the potential application of POFA and Rice Husk Ash in foamed concrete production. The density of foamed concrete is influenced by the amount of foam added to the cement and sand mixture. Compressive strength tests were performed on concrete cubes containing POFA and Rice Husk Ash, and the results were compared with conventional foam concrete.

Keywords: Foam Concrete, Aerated Mortar, Pre-formed Foam, POFA, Rice Husk Ash, Portland Pozzolan Cement, Compressive Strength, Concrete Density.

IC23-150: AUTOMATED LEARNER ENGAGEMENT DETECTION SYSTEM DURING LIVE SESSIONS

[1]NAVIN DUWADI
NEPAL OPEN UNIVERSITY, NEPAL
76251002@nou.edu.np

ABSTRACT:

With rapid technological advancements, the world is becoming increasingly digital. As a result, online learning has gained widespread popularity, with lectures and seminars transitioning into virtual formats, such as webinars. This system focuses on detecting whether a participant in a live webinar remains engaged or distracted. The primary objective is to track eye gaze during a live session using computer technologies and provide real-time feedback to the presenter. By analyzing the participant's focus, the presenter can assess their ability to maintain audience engagement and refine their presentation skills if needed. The system requires only access to the participant's webcam to determine their level of attentiveness.

Keywords: Webinars, Computer Technologies, Eye Gaze, Focus Detection, Live Sessions, Viewer Engagement, Webcam-Based Monitoring.

IC23-032: EXPERIMENTAL INVESTIGATION ON THE PROPERTIES OF FLEXIBLE CONCRETE

[1]ASMA KAUSAR MUKHTAR ALI, [2]GARY LOH CHEE WYAI
MJIIT UNIVERSITI TECHNOLOGI, MALAYSIA
aftabasma@graduate.utm.my

ABSTRACT:

Bendable concrete, also known as Engineered Cementitious Composites (ECC), exhibits significantly enhanced flexibility compared to conventional concrete. ECC has a strain capacity exceeding 3%, allowing it to behave more like a ductile metal rather than a brittle material. This study evaluates the mechanical properties of various ECC mixtures by incorporating supplementary cementitious materials. Unlike traditional concrete, ECC is produced without coarse aggregates, improving its strain-hardening behavior. Several tests, including slump test, compression test, split tensile test, and flexural test, are conducted to assess the material's performance. The results indicate that even with a low fibre volume fraction (2%), ECC exhibits strain-hardening, achieving a strain capacity of approximately 3–5%, compared to 0.01% in normal concrete. The flexural strength is determined through testing, revealing that ECC beams can endure high loads and significant deformations without experiencing brittle fracture, even in the absence of steel reinforcement.

Keywords: ECC, Flexibility, Ductile Metal, Brittle Fracture, Mechanical Properties, Strain Capacity, Flexural Strength, Supplementary Cementitious Materials, Strain-Hardening.

IC23-114: TREATMENT OF HOUSEHOLD WASTEWATER USING POLYALUMINIUM CHLORIDE

[1]DR G GNANAPRAGASAM, [2]D AKILA, [3]A ARTHI, [4]G GURUPPRIYA, [5]R VASANTHAVIZHI
NATIONAL INSTITUTE OF TECHNOLOGY, INDIA

ABSTRACT:

This research focuses on sewage and effluent treatment processes to ensure compliance with regulatory guidelines. The primary objective of sewage and effluent treatment is to eliminate pollutants, including solids, organic carbon, nutrients, inorganic salts, metals, and pathogens. Effective wastewater collection and treatment are crucial for both environmental protection and public health. Various treatment methods are employed to reduce water and organic content, with the ultimate goal of preserving the environment while addressing public health and socio-economic concerns. This study explores sewage and effluent treatment techniques, factors influencing treatment selection and design. Poly-aluminium chloride (PAC) is utilized as a coagulant in effluent treatment plants to remove bacteria, sludge particles, odors, and discoloration. Effluent treatment plants (ETPs) aid in dust suppression, while sewage treatment plants (STPs) contribute to agricultural cultivation.

Keywords: Sewage treatment, Effluent treatment, Poly-aluminium chloride (PAC), Sludge removal, Wastewater management.

IC23-205: AN EXPERIMENTAL INVESTIGATION ON PARTIAL SUBSTITUTION OF FINE AGGREGATE WITH FOUNDRY SAND, M-SAND, AND COARSE AGGREGATE WITH STEEL SLAG IN CONCRETE

[1]UPPALAPATI SUDHEER KUMAR
SARDAR VALLABHBHAI NATIONAL INSTITUTE OF TECHNOLOGY, INDIA
ds22el004@eed.svnit.ac.in

ABSTRACT:

In India, conventional cement production primarily relies on natural river sand as fine aggregate. The increasing demand for sustainable concrete production has led to the partial replacement of fine aggregate with foundry sand, reducing waste disposal issues and environmental pollution. Steel slag, a byproduct of the steel manufacturing industry, is produced in large quantities worldwide during metal refining and alloy production. This study investigates the behavior of concrete when incorporating industrial waste materials such as foundry sand, M-sand, and steel slag in varying proportions. The experimental analysis includes the partial replacement of fine aggregate with foundry sand (50%, 100%) and coarse aggregate with steel slag (40%), as well as the replacement of fine aggregate with M-sand (50%, 100%) and coarse aggregate with steel slag (40%). The study evaluates M25 grade concrete with a mix ratio of 1:1.58:2.72 compared to conventional concrete. Concrete cubes of size 150mm × 150mm × 150mm are used for the compressive strength test after 28 days of curing.

Keywords: Foundry sand, M-sand, Steel slag, Compressive strength, Conventional concrete.

IC23-072: EFFICIENT AND PRIVACY-PRESERVING ONLINE FINGERPRINT AUTHENTICATION SCHEME FOR OUTSOURCED DATA

[1]ESTHER F. FOMSI, [2]TAOFIK TOLA AJAGBE
UNIVERSITY OF PORT HARCOURT, NIGERIA
esther.fomsi@uniport.edu.ng

ABSTRACT:

In today's digital era, biometric technology has advanced significantly, relying entirely on an individual's unique characteristics. However, concerns over privacy issues related to biometric data have intensified due to the highly sensitive nature of such information. To address this challenge, we propose a secure authentication system utilizing encrypted outsourced fingerprint data. The proposed system incorporates an authentication factor to ensure secure transmission of fingerprint data to outsourced users for security purposes. Euclidean distance calculation is employed as a key technique to achieve reliable authentication, leveraging personal traits to resist various security threats. Additionally, an online fingerprint authentication system is implemented across multiple outsourced servers using real images, ensuring efficient and accurate authentication.

Keywords: Privacy-Preserving, Online Authentication, Fingerprint, Outsource, Euclidean Distance.

IC23-138: IoT-BASED ALCOHOL DETECTION AND HEALTH MONITORING SYSTEM

[1]S K NANDHINI, [2]S DHARANI, [3]S SAKTHIVEL
PAAVAI ENGINEERING COLLEGE, INDIA
nandhinisktnj@gmail.com

ABSTRACT:

Industries such as factories, offices, hospitals, and the military must ensure that their personnel adhere to workplace ethics, including avoiding premises while under the influence of alcohol or experiencing health issues. To enforce this, the proposed system introduces an IoT-based alcohol and health monitoring system that remotely tracks and reports staff conditions over the internet. The system consists of a microcontroller-based embedded circuit equipped with alcohol and blood pressure sensors to detect intoxication and abnormal health conditions. This prevents workplace accidents caused by alcohol consumption or poor health. Additionally, shifting routine medical diagnostics from hospitals to home-based monitoring reduces hospital expenses and unnecessary hospitalizations by ensuring timely and accurate health assessments.

Keywords: Embedded system, AVR Microcontroller, Internet of Things, Alcohol Monitoring, Health Monitoring Sensor.

IC23-066: EXPERIMENTAL INVESTIGATION ON THE PERFORMANCE OF CONCRETE REINFORCED WITH BRISTLE COIR FIBERS

[1]SWATHI, [2]S KOTTEESWARAN
JAYA ENGINEERING COLLEGE, INDIA
jswathi315@gmail.com

ABSTRACT:

One of the fundamental principles in civil engineering states that concrete exhibits high compressive strength but weak tensile strength due to its brittle nature. To address this limitation, fiber-reinforced concrete (FRC) has been developed. Fibers are small, discontinuous, and randomly oriented reinforcements that significantly improve structural integrity, tensile strength, and porosity reduction in concrete. Recent advancements in FRC emphasize the use of naturally available fibers such as nylon, polypropylene, and coir, including unconventional materials like human hair. Unlike steel fibers, which are expensive and prone to corrosion, coir fibers offer an eco-friendly and cost-effective alternative. In particular, bristle coir fibers, extracted from coconut husks, are stiffer and stronger than regular coir fibers, making them suitable for reinforcement applications. Since they are natural materials, their production process is environmentally sustainable and contributes to reducing cement consumption, thus minimizing environmental impact. This study explores the integration of bristle coir fibers in concrete to enhance its mechanical properties and determine the optimal fiber percentage for maximum efficiency.

Keywords: Fiber-reinforced concrete, coir fiber, bristle coir fiber, tensile strength, structural integrity, porosity reduction, sustainable construction.

IC23-187: PERFORMANCE ANALYSIS OF STEEL-CONCRETE COMPOSITE AND PRESTRESSED CONCRETE BRIDGES UNDER IRC LOADING

[1]SANDHIYA, [2]S KOTTEESWARAN
JAYA ENGINEERING COLLEGE, INDIA
rsandhiya609@gmail.com

ABSTRACT:

Bridges are essential structural elements facilitating transportation, with their performance and behavior varying based on design type. This study focuses on the distinct characteristics of prestressed post-tensioned bridges and composite bridges, comparing their performance through analytical and experimental methods. The structural analysis considers construction sequences, with live load analysis conducted per IRC loading standards. The analytical approach involves modeling the bridge using STAAD Pro to evaluate bending moments and shear forces, which aid in calculating stresses and deflections. The experimental approach involves casting a scaled girder, applying scaled loads based on T-beam and L-beam distribution, and assessing the bridge's response. Finally, the experimental results are correlated with analytical findings to determine actual bridge performance. This phase of work presents analytical results, which are tabulated for further discussion.

Keywords: Prestressed Post-Tensioned Bridges, Composite Bridges, Analytical Method, Experimental Method, STAAD Pro, Bending Moment, Shear Force, IRC Loading.

IC23-029: SMART ANDROID-BASED TELEVISION NOTICE BOARD FOR ENHANCED DATA PROCESSING SPEED

[1]J SANGEETH KUMAR, [2]G C SUKANTH, [3]R SUNESH,
[4]P PUNITHA, [5]DR T KALAIKUMARAN
SNS COLLEGE OF TECHNOLOGY, INDIA

ABSTRACT:

Traditional notice boards rely on manual processes, requiring personnel to update and distribute circulars physically, making it time-consuming and inefficient. Managing multiple paper notices across institutions poses challenges in organization and timely dissemination. Existing microcontroller-based digital notice boards using web applications require the device to be connected to the same network for updates. To overcome these limitations, we propose an Android-based Smart Television Notice Board that leverages the internet for remote content updates. This system allows administrators to modify notices using a smartphone or computer with an internet connection, enabling real-time access and updates from any location. An Android Television acts as the display unit, running the "Android Television Notice Board" application, which retrieves data from a cloud-based database. This approach modernizes notifications, increases processing speed, reduces manual efforts, and ensures efficient communication.

Keywords: Android Television, Notice Board, Internet, Notification, Wireless-Fidelity, Network, Display, Application, Administrator, Database.

IC23-134: UNIFIED PLATFORM FOR INTEGRATED LENDING PAYMENTS

[1]RONALD CHIWARIRO, [2]PROSPER TAFADZWA DENHERE
HARARE INSTITUTE OF TECHNOLOGY, ZIMBAWE
chiwariro@gmail.com

ABSTRACT:

This paper presents a credit information system utilizing machine learning to streamline the lending process. The system is implemented as a web application that minimizes manual effort by automating credit applications. Users submit the required documents and details, which are processed by an algorithm to verify authenticity and detect duplicates. If verified as genuine, the request is automatically sent to the central server. Acting as an intermediary, the central server facilitates communication between users and lending institutions integrated into the platform. The authenticated details are forwarded to the respective lenders, who validate the information and respond to the central server. Upon approval, the confirmation is relayed to the user via email. The system allows users to select credit options that meet their requirements and proceed accordingly.

Keywords: Credit Information System, Machine Learning, Web Application, Central Server, Authentication, Lending Institutions, Automated Credit Application.

IC23-004: IoT-ENABLED SMART AGRICULTURE MANAGEMENT AND DIRECT MARKET INTEGRATION SYSTEM

[1]R PRADEEP, [2]S BALAJI, [3]S ABILASH, [4]R DIVYA, [5]S VIGNESHWARAN
SNS COLLEGE OF TECHNOLOGY, INDIA
pradeep.sign@gmail.com

ABSTRACT:

Agriculture remains the primary occupation in our country. However, challenges such as population growth, unpredictable monsoons, limited irrigation resources, and middlemen exploitation restrict its efficiency. To address these issues, IoT-based smart agriculture techniques are introduced. This paper presents an advanced agricultural system integrating GPS and GSM-based remote monitoring, moisture and pest detection, temperature sensing, intruder deterrence, automated irrigation, and direct market access by sharing controlled parameter details with customers. Sensor nodes are strategically deployed across the farm, enabling real-time control through remote devices or the internet. Operations are managed using integrated sensors, Wi-Fi, a camera, and a microcontroller. This system is developed as a product aimed at improving farmers' welfare.

Keywords: IoT, Sensors, GPS, Microcontroller, Wi-Fi, Cloud, Remote Monitoring, Smart Agriculture.

IC23-173: PRODUCTION OF PAVEMENT TILES UTILIZING HDPE PLASTIC WASTE

[1]DR IBRALEBBE MOHAMED KALITH
DEPARTMENT OF ICT,
SOUTH EASTERN UNIVERSITY, SRI LANKA
imkalith@seu.ac.lk

ABSTRACT:

This study explores the enhancement of flexural and compressive strength in pavement tiles using high-density polyethylene (HDPE) plastic waste. The flexural and compressive strength of the tiles are evaluated using a compression testing machine. M-sand is incorporated as a filter material, contributing to the structural integrity of the tiles. These tiles can be produced either manually or through machinery. The bonding strength between HDPE and M-sand is expected to be higher than that of conventional ceramic tiles. During compaction, the tiles are layered into three sections, ensuring a strong bond between the bottom layer and the concrete base. This process significantly improves the durability of the tiles. Since plastic waste is non-biodegradable and its disposal through burning contributes to environmental pollution, this innovative approach offers a sustainable solution for repurposing plastic waste. Given the rapid increase in plastic waste, it is projected to double within the next decade. By incorporating plastic waste into tile manufacturing, this method provides an effective way to reduce pollution while offering a viable construction material.

Keywords: HDPE plastic waste, flexural strength, compressive strength, M-sand, bonding strength, durability, pavement tiles, non-biodegradable waste, pollution control, construction material.

IC23-099: ACID-RESISTANT BRICKS AND TILES

[1]SOUNDARI L, [2]ARAVINDRAJ G, [3]BALAJI K, [4]NARENDRAN R, [5]SUBASH E
IFET COLLEGE OF ENGINEERING, INDIA

ABSTRACT:

In today's world, industrial waste generation is increasing rapidly, posing significant environmental challenges. Integrating these waste materials into building material production presents a sustainable solution. As a result, there is growing interest in waste utilization (waste recycling) due to both environmental and economic factors. This study explores the use of granite sludge powder, quarry dust, silica sand, and white clay in manufacturing acid-resistant bricks and tiles, making them both cost-effective and durable. By altering the composition of raw materials, multiple samples are produced and tested for various properties, including compression strength, flexural strength, water absorption, and acid mass loss. The experimental results indicate that the developed bricks and tiles demonstrate high resistance in both HCl and H_2SO_4 environments, aligning with IS:4860-1968 standards.

Keywords: Granite sludge powder, Industrial waste, Acid resistance, Cost-effective, Water absorption, Compression test, Flexural test, Waste recycling.

IC23-063: DESIGN AND ANALYSIS OF BLAST-RESISTANT RESIDENTIAL BUILDING

[1]Y DEVANRAJ, [2]K SHANTHI
PPG INSTITUTE OF TECHNOLOGY, INDIA
devanrajy71@gmail.com

ABSTRACT:

Terrorism remains one of the most critical threats in the modern world, creating widespread insecurity despite technological advancements and counterintelligence efforts. Blast forces can severely compromise structural integrity, leading to partial or total collapse of building components. The impact of explosive loads on structures must be a crucial factor in the design process. Although such attacks are rare, man-made disasters and blast loads are significant dynamic forces that must be meticulously analyzed, similar to earthquake and wind loads. The objective of this study is to explore blast-resistant building design principles and enhance structural safety against explosive impacts from both architectural and engineering perspectives. Additionally, the structural safety is evaluated using force-time history analysis in STAAD Pro software.

Keywords: Terrorism, Blast Forces, Dynamic Loads, Structural Integrity, Safety, Security, STAAD Pro.

IC23-208: INDUSTRIAL WASTEWATER TREATMENT USING FLY ASH AND BROKEN TILES

[1]MUHAMMAD MUJAHID
DEPARTMENT OF COMPUTER SCIENCE,
KHWJA FAREED UNIVERSITY OF ENGINEERING AND INFORMATION TECHNOLOGY, SAUDI ARABIA
mujahidws890@gmail.com

ABSTRACT:

The primary objective of this research is the treatment of industrial wastewater. Fly ash, with its high carbon content, acts as an effective absorbent for removing impurities from wastewater. Additionally, broken tile waste is utilized to reduce turbidity to a level suitable for slow sand filtration. Sand filtration is commonly used in water treatment to eliminate dissolved iron. Through aeration, iron and manganese in the water are oxidized, forming flocs that are subsequently trapped in the sand filter. Waste tiles are specifically characterized and employed as a filtration medium to remove impurities such as BOD and COD from industrial wastewater.

Keywords: Fly ash, broken tiles, sand filtration, industrial wastewater, turbidity reduction, BOD, COD.

IC23-053: MEDICAL STORE MANAGEMENT SYSTEM

[1]K DEEKSHA, [2]R ADHITHI, [3]S AMOS PAUL, [4]DR SABITHAA
PSNA COLLEGE OF ENGINEERING AND TECHNOLOGY, INDIA
deekshak2805@gmail.com

ABSTRACT:

The research, titled "Medical Store Management System," is designed to efficiently handle various aspects of a sales market, including sales records, purchase details, billing, inventory management, and supplier information. This system operates exclusively at the administrative level, ensuring secure access for authorized users. The primary objective is to minimize manual efforts in managing medical store operations, such as stock maintenance, medicine tracking, and inventory control. Additionally, the system facilitates financial calculations, including yearly maintenance and final-year accounting for medical shops. Since pharmacies play a crucial role in human healthcare, this system provides an organized and automated approach to managing essential pharmacy operations. The research is developed using PHP and MySQL for effective database management and seamless system functionality.

Keywords: Medical store, sales market, billing, inventory, supplier data, pharmacy, PHP, MySQL.

IC23-115: ASSESSMENT OF GROUNDWATER QUALITY AND ITS SUITABILITY FOR DOMESTIC AND AGRICULTURAL USE

[1]DR ESMOT ARA TULI
KUMOH NATIONAL INSTITUTE OF TECHNOLOGY, SOUTH KOREA
esmot@kumoh.ac.kr

ABSTRACT:

This study evaluates the quality of groundwater and its suitability for domestic and irrigation purposes. The study area was selected based on its vulnerability to seawater intrusion, and specific locations were identified for sample collection. The research highlights the impact of groundwater contamination due to seawater intrusion in the region. Water samples were collected from various sources, including bore wells, hand pumps, dug wells, and irrigation water, to analyze the presence of salts, acids, and other constituents. Some samples were found suitable for drinking, while others were appropriate for agricultural use. The collected samples were stored in polythene containers and tested within a specific timeframe. Both physical and chemical analyses were conducted, examining fluoride, chloride, total dissolved solids, total hardness, pH, calcium, and other parameters. The groundwater quality and its suitability for irrigation purposes varied across different locations. Laboratory tests were performed to determine the salt content and stabilize the samples. A comparative analysis of groundwater suitability for domestic and irrigation purposes was conducted, providing insights into groundwater characteristics and potential impacts.

Keywords: Groundwater quality, seawater intrusion, bore wells, irrigation water, total dissolved solids, fluoride, chloride, pH.

IC23-041: EXPERIMENTAL INVESTIGATION ON PARTIAL SUBSTITUTION OF CEMENT WITH BAGASSE ASH AND FINE AGGREGATE WITH PRESS MUD IN CONCRETE

[1]K DHIVYA, [2]G GNANAPRAGASAM
IFET COLLEGE OF ENGINEERING, INDIA
dhivyakannan18201988@gmail.com

ABSTRACT:

Environmental degradation has become a critical concern, significantly impacting the quality of life. One of the primary contributors to environmental pollution is the emission of carbon dioxide (CO_2) during cement production. To mitigate this issue, the partial replacement of cement with bagasse ash has been explored, as it significantly reduces CO_2 emissions. This study investigates the compressive strength of concrete when cement is substituted with bagasse ash at levels of 10%, 20%, and 30%. While reducing cement usage, challenges persist due to the high demand for sand in concrete production. To address this, fine aggregate is partially replaced with press mud in proportions of 5%, 10%, and 15%. The findings indicate that this combined substitution enhances both the workability and compressive strength of concrete. Therefore, the partial replacement of cement with bagasse ash and fine aggregate with press mud not only maintains concrete strength but also contributes to environmental sustainability.

Keywords: Bagasse ash, Press mud, Workability, Compressive strength, Cement replacement, Fine aggregate replacement, CO_2 reduction.

IC23-183: AN INTELLIGENT METHOD FOR DETECTING HIDDEN SPY CAMERAS USING PROXIMITY SENSORS IN CCTV SYSTEMS

[1]PARKAVI C, [2]RAKESH R, [3]NAVANEETHAN R, [4]KRISHNA KUMAR S,
SNS COLLEGE OF TECHNOLOGY, INDIA
parkavi1206@gmail.com

ABSTRACT:

In today's world, CCTV cameras are widely utilized for security and surveillance purposes. These cameras continuously monitor and record activities to enhance safety. This study aims to improve security in theatres by detecting unauthorized recording devices. The proposed system integrates real-time monitoring and long-sequence recording analysis. A CCTV camera is employed to identify hidden recording devices such as mobile phones, nano cameras, and micro cameras. Night vision technology, combined with image processing techniques, enables the detection of concealed cameras. Additionally, a proximity sensor is implemented to identify individuals attempting to record movies. Upon detecting unauthorized recording, the system immediately alerts the control room. The proximity sensor operates without physical contact, emitting an electromagnetic field or infrared signals, which, when disrupted, triggers an alert.

Keywords: CCTV camera, Proximity sensor, Image processing, Night vision, Surveillance.

IC23-008: EXPERIMENTAL STUDY AND ANALYSIS OF FERROCEMENT SLABS AND DOMES

[1]DIVYA, [2]S KOTTEESWARAN
SRM INSTITUTE OF SCIENCE AND TECHNOLOGY, INDIA

ABSTRACT:

Ferrocement is a composite material consisting of a cement matrix reinforced with multiple layers of mesh. These structures exhibit high durability and strength due to their thin composition and widely distributed steel reinforcement. This study focuses on analyzing the flexural behavior of ferrocement domes. Although ferrocement construction is labour-intensive, involving hand-applied mortar or spray application, it is widely used in developing countries where labour costs are low. In Western regions, its primary applications include boat hull construction, roof shells, and decorative elements. A model is developed and tested to examine its flexural properties. High-strength mortar is prepared by partially replacing cement with Ground Granulated Blast Furnace Slag (GGBS) and incorporating silica fume. The compressive strength of the mortar is evaluated, and it is used in ferrocement members for further testing. Ferrocement slabs are cast and subjected to flexural and impact behavior analysis. The flexural test, conducted using a four-point loading method, demonstrates pure shear failure, while the impact test reveals punching failure in the slabs. A ferrocement dome model is also developed and analyzed using software, with results compared between experimental and analytical findings.

Keywords: Ferrocement, GGBS, Roof Shells, Composite Material, Flexural Behavior, Impact Test, Shear Failure, Punching Failure.

IC23-125: AN IoT-BASED KIOSK FOR MATERNAL HEALTHCARE IN RURAL COMMUNITIES

[1]DR SHANTHI SELVARAJ, [2]ABARNA K, [3]DEEPAK RAJ K P, [4]JANAPRITHA N
SNS COLLEGE OF ENGINEERING, INDIA
psshanthiselvaraj@gmail.com

ABSTRACT:

Human resources serve as the backbone of both developing and underdeveloped nations. In many developing regions and smart cities, the medical system lacks centralization for efficient information sharing. Pregnant women in rural areas often face challenges in accessing regular check-ups during the early stages of pregnancy, leading to increased infant and maternal mortality rates. This poses a significant health concern for society. Existing methods require rural residents to travel long distances for doctor consultations, where they undergo ultrasound scans and vital sign measurements processed via Bluetooth technology. To address these challenges, this research proposes the use of various sensors to monitor vital parameters such as blood pressure, blood glucose levels, and heart rate. The goal is to develop a compact, low-cost Near Field Communication (NFC) device utilizing advanced sensors and IoT to provide maternal and fetal health monitoring in rural areas.

Keywords: Human resources, developing nations, smart cities, medical system, pregnant women, maternal mortality, rural areas, doctor consultation, ultrasound scan, Bluetooth technology, sensors, blood pressure, blood glucose, heart rate, Near Field Communication (NFC), IoT.

IC23-177: FINGERPRINT-BASED LICENSE VERIFICATION AND HELMET DETECTION ANTI-THEFT SYSTEM

[1]M SAMIRAJA, [2]G SURESHKUMAR, [3]M YUVARAJ,
[4]P POONKODI, [5]DR T. KALAIKUMARAN
SNS COLLEGE OF TECHNOLOGY, INDIA
samiraja541997@gmail.com

ABSTRACT:

To reduce the number of unlicensed drivers and minimize accident occurrences, a new system is proposed based on human identification techniques for driving authorization and verification. Fingerprint recognition is one of the most widely used security systems, offering enhanced biometric authentication. Vehicles, including cars and motorcycles, will be equipped with a fingerprint scanning device that stores and verifies authorization. Additionally, the system ensures that the driver wears a helmet by detecting it through a switch mechanism. Only when both conditions are met will the vehicle ignition function; otherwise, it remains disabled.

Keywords: Fingerprint recognition, biometric authentication, driving authorization, helmet detection, vehicle ignition.

IC23-048: EXPERIMENTAL STUDY ON THE BEHAVIOR OF STEEL FIBER REINFORCED CONCRETE USING MAGNETIC AND CONVENTIONAL METHODS

[1]KANIMOZHI, [2]KOTTEESWARAN
SRM INSTITUTE OF SCIENCE AND TECHNOLOGY, INDIA

ABSTRACT:

Enhancing the properties of concrete remains a significant challenge for concrete technologists. Over the past two decades, magnetic water technology has been adopted in the concrete industry, particularly in Russia and China. This technique involves passing water through a magnetic field, altering its physical properties by reducing the number of molecules in a water cluster from 13 to 5 or 6, consequently lowering the surface tension. The incorporation of magnetized water in concrete mixtures enhances workability and strength. Magnetic treatment increases ion solubility and pH levels, modifying the precipitation pattern of calcium carbonate to form circular disc-shaped particles instead of dendritic structures found in untreated water. While widely used for water softening, this research applies magnetic water for concrete production. Some studies suggest that magnetic treatment influences hydrogen bonds between water molecules, resulting in higher slump values and improved compressive strength in concrete. Additionally, the cement content can be reduced by 28% in magnetic concrete while maintaining performance.

Keywords: Magnetic water, pH, magnetic field, compressive strength, calcium carbonate.

IC23-094: CLOUD-BASED DEEP LEARNING FRAMEWORK FOR MENTAL HEALTH PREDICTION USING SMARTWATCH DATA IN SMART HEALTHCARE

[1]POOVENDRAN ALAGARSUNDARAM
HUMETIS TECHNOLOGIES INC, KINGSTON, NJ, USA
poovendrana@ieee.org

ABSTRACT:

Mental health disorders such as anxiety, depression, and stress are prevalent worldwide, affecting millions of people. Existing systems for mental health prediction often rely on smartphone sensors, which are prone to privacy risks and scalability issues. This paper proposes a cloud-based deep learning framework for mental health prediction collecting data from smartphone sensor data it involves detecting whether mental health conditions are detected or not and securely storing the data in the cloud for real-time analysis. The framework begins with data collected from smartphone sensors and preprocessing using, handling values, and outlier detectors followed by feature extraction through RBMs. Next, Siamese Networks are employed for classification, ensuring data privacy with Homomorphic Encryption during the computation. Cloud storage is used for scalable, secure data handling and processing. The framework achieved a training accuracy of 99.5% and a validation accuracy of 98.6%. The latency for processing increased with data size, reaching an average of 0.15 seconds per data point. Additionally, the Homomorphic Encryption overhead was minimal, with an average performance degradation of only 5%. The proposed framework successfully integrates Homomorphic Encryption and cloud storage, offering a secure, scalable, and accurate solution for mental health prediction using smartphone data.

Keywords: Smartwatch data, Mental Health Prediction, Restricted Boltzmann Machines, Deep Learning, Homomorphic Encryption.

IC23-164: AN EXPERIMENTAL STUDY ON SELF-HEALING OF CRACKS USING FLY ASH AND HYDRATED LIME AS SELF-HEALING AGENTS

[1]ISWARAYA, [2]KOTTEESWARAN
SRM INSTITUTE OF SCIENCE AND TECHNOLOGY, INDIA

ABSTRACT:

Cracking in concrete is a frequent occurrence due to its inherently low tensile strength. These cracks compromise the durability of concrete by allowing the penetration of liquids and gases that may carry harmful substances. If micro-cracks expand and reach the reinforcement, both the concrete and the embedded steel are susceptible to deterioration and corrosion. Therefore, controlling crack width and enabling timely self-healing is crucial. Given the high costs associated with maintenance and repair, this study aims to develop self-healing concrete. The selection and analysis of suitable self-healing methods and materials were conducted, with fly ash and hydrated lime chosen as the healing agents. Concrete beams of dimensions (125x125x375) mm were cast based on specified material proportions. The healing agents were incorporated at 20%, 40%, and 60% replacement levels, and specimens were prepared accordingly. Artificial cracks were introduced in each specimen, followed by a curing process. The cracked specimens were individually observed, and the healing time was recorded. The results were assessed by comparing the crack healing time across different specimens.

Keywords: Self-healing of crack, fly ash, hydrated lime, curing, reinforcement corrosion.

IC23-002: VIRTUAL MIRROR FOR STYLE ENHANCEMENT

[1]K S JYOTHIPRIYA, [2]S JEEVITHA, [3]JANAT J MEJULA, [4]G RENUGADEVI
SNS COLLEGE OF TECHNOLOGY, INDIA
jyothipriya.3998@gmail.com

ABSTRACT:

This framework enables users to shop online more intelligently by virtually trying on various accessories such as sunglasses, caps, necklaces, etc., using a webcam. The clicked image is automatically placed on the user's face or other body parts using face detection algorithms like Viola-Jones. This unique feature enhances the system, making it stand out as a completely different website compared to other existing platforms.

Keywords: online shopping platform, face detection, fashion accessories, virtual try-on, Viola-Jones.

IC23-130: X-RAY IMAGE REPORTING SYSTEM

[1]S KARTHIKA, [2]DR T KALAIKUMARAN
SNS COLLEGE OF TECHNOLOGY, INDIA

ABSTRACT:

The research titled "X-ray Image Reporting" is developed using ASP.NET for the frontend and SQL Server for the backend. Modern clinical examinations in medicine depend on various imaging diagnostic techniques. However, existing medical data systems are not designed for clinical trials using clinical imaging. While commercial software and communication systems focus on storing image data, they are not suitable for storing and analyzing new types of quantitative data. This research aims to develop a web-based tool to support diagnostic clinical trials involving multiple doctors, hospitals, or research centers. The image analysis in this research is based on skeletal X-ray imaging, employing automated image techniques for quantitative analysis of areas of interest in healthy bones and skeletal metastases. The backend database is implemented using ASP.NET 3.5 and C# technologies for the web application, and SQL Server is used for data storage, a widely used open-source database. User logins are required, and patient data access is logged for auditing. To ensure security, all data transmissions are conducted through encrypted connections. This web-based tool is accessible to users at various locations, allowing efficient organization and storage of data (case report forms) and images, enabling each user to understand exactly what the research entails.

Keywords: X-ray Image Reporting, Web-based Application, Skeletal X-ray Imaging, SQL Server, Data Encryption.

IC23-078: HOME APPLIANCES AUTOMATION WITH EXTENDED WARRANTY SYSTEM USING IoT

[1]DR RENUGA D, [2]M GOKILA, [3]S GOKUL, [4]R KAVIRUBA
SRI SIVASUBRAMANIYA NADAR COLLEGE OF ENGINEERING, INDIA
kavirubark@gmail.com

ABSTRACT:

This paper aims to describe a real-life example of warranty service, analyzing its management within a manufacturing company that provides guarantees over a specific period and follows a scheduled distribution. With the sale of a product, manufacturers are now legally obligated to offer warranty services to the customer. Reducing costs is clearly not the only aspect to achieve, as the decision must be global and strategic within the organization in order to purchase a reliable and durable product, also providing appropriate after-sales service to the customer. Key aspects will be presented in this study to assess costs and, consequently, to make informed decisions for driving the company toward a successful goal. To achieve this, not only should administrators and responsible parties in a fixed and controlled organization participate, but it would also be important to consider the experience provided by the technical staff for maintenance and warranty. Thus, this paper will demonstrate how analyzing past performance can predict and control the future. In this case, it will be possible to observe how the growth of costs during the lifetime of a warranty service program can address and predict with greater precision the total expected cost of the activity considered at the beginning of the program. This paper is based on a common system for special supplies in the public sector (e.g., a fleet of customized vehicles), between companies within the supply chain, or directly to the end customer, where the final customer is, for example, a public entity, and the budget for the total warranty service is already known from the beginning of the research.

Keywords: Arduino UNO, Relay, LCD Display, Warranty Service, Manufacturing

IC23-192: WOMEN'S SAFETY MONITORING SYSTEM USING IoT

[1]DR SATHISH KUMAR M, [2]G DHARINI, [3]V JAYASURYA, [4]S JOSUVA
SNS COLLEGE OF TECHNOLOGY, INDIA
dharuganesh2304@gmail.com

ABSTRACT:

In today's world, the safety of women and children faces significant risks, with crimes related to safety on the rise. We propose a prototype system that offers global security measures. It tracks the victim's current location and sends notifications through body gestures, movements, or vibrations, enabling nearby police or relatives to provide immediate assistance. The system uses an accelerometer to detect gestures, a vibration sensor to detect forceful movements, and a GPS sensor to share the location. Pulse rate sensors monitor body temperature and heartbeat, with all activities overseen by an Arduino UNO.

Keywords: GPS, Accelerometer, Arduino UNO, Body Movements, Pulse Rate Sensors.

IC23-027: MULTI-BIOMETRIC SYSTEM FOR ENHANCED SECURITY APPLICATIONS

[1]MANI SURYA SAVA, [2]KATHIRVELU M, [3]RAKESH YADAV, [4]RAMAKRISHNA SAVIRIGANA, [5]NIVAS SIMHADRI
GMR INSTITUTE OF TECHNOLOGY, INDIA

ABSTRACT:

Iris recognition and face recognition are considered among the most reliable and accurate biometric systems available to date, offering advantages such as security, speed, accuracy, scalability, and stability. This paper focuses on enhancing security in crowded places (like malls, airports, schools, and colleges) and high-security areas (such as research centers and border security). The system operates contactless from a distance, unlike most current systems that are slow and often inaccurate, causing inconvenience for users. The proposed system is both cost-effective and efficient. A major benefit of this integrated approach is compensating for errors in facial feature detection caused by occlusions, pose, and illumination changes. We propose extracting HOG descriptors from a regular grid to improve accuracy. Additionally, the system aims to reduce redundancy and remove irrelevant features to make the classification process less prone to overfitting. Continuous snapshots are taken when an individual enters the zone, processed by the system to compare with the existing data of trusted individuals.

Keywords: Iris recognition, face recognition, biometric systems, HOG descriptors, security.

IC23-141: DESIGN AND IMPLEMENTATION OF OPTIMIZED AREA AND PDP MULTIPLIER FOR HIGH-SPEED DIGITAL CIRCUIT APPLICATIONS

[1]M KATHIRVELU, [2]P SANDHYA RANI, [3]I VAMSI KRISHNA, [4]K BHARATH
GMR INSTITUTE OF TECHNOLOGY, INDIA

ABSTRACT:

Low power and high-speed multipliers are essential for high-speed switching applications, such as digital signal processing (DSP), microprocessors, and filters. Various multiplier architectures have been explored by different researchers. In an 8-bit array multiplier, partial products are generated through AND gates and added sequentially using Full Adders and Half Adders. The array multiplier relies on the computations of previous partial sums to produce the final output, resulting in higher delay. The proposed architecture reduces delay by adding partial products in parallel, achieving faster output generation. The power dissipation of the full adder is minimized by implementing it with CMOS technology. The designed 8-bit multiplier is implemented and simulated using the Cadence Virtuoso tool in 90nm technology, with performance metrics such as power, speed, and area analysed.

Keywords: Full adder, Half adder, Multiplier, Proposed method, Power dissipation

IC23-060: AN INTELLIGENT SYSTEM FOR IDENTIFICATION OF FUEL FRAUDULENCE AND NEARBY FUEL STATIONS

[1]M KATHIRVELU, [2]K SRAVANI, [3]M RAMA LAKSHMI, [4]M JACINTH, [5]P SUBBA RAMI REDDY, [6]R N V SAI KUMAR
GMR INSTITUTE OF TECHNOLOGY, INDIA
mkathirvelu77@gmail.com

ABSTRACT:

The rising number of fuel frauds has become a significant concern in society. Fuel pumps at petrol stations are manipulated to show a higher amount of fuel dispensed than actually delivered, leading to financial gain for the petrol station owners by cheating customers. To address this issue, a system has been developed that uses a flow rate sensor to measure the actual fuel dispensed, displaying the measurement on an LCD screen. The measured data is then sent via GSM (Global System for Mobile Communication) technology to a registered mobile, creating a verifiable record. This system allows transportation network companies to maintain a record of fuel usage by their drivers. Additionally, if the fuel level drops below a preset threshold, an LED light continuously glows until refuelling occurs, and the system also displays the distance to the nearest petrol station using GPS, which is shown on the LCD.

Keywords: Fuel Level Monitoring, Flow Sensor, GPS, Threshold Value, GSM

IC23-184: IMPROVEMENT OF ANTIPODAL VIVALDI ANTENNA PERFORMANCE FOR WIRELESS APPLICATION

[1]B M S SREENIVASARAO, [2]K V L THANMAYI, [3]G INDIRA,
[4]G S L NAVYA, [5]P SATYA NARAYANA
GMR INSTITUTE OF TECHNOLOGY, INDIA

ABSTRACT:

This paper explores the miniaturization of an antipodal Vivaldi antenna by incorporating triangular slots. A conventional antipodal Vivaldi antenna is designed using an FR4 epoxy substrate with a dielectric constant of 4.4 and a thickness of 1.6 mm. To achieve size reduction, triangular and circular slots are introduced on the upper layer. The triangular slot significantly reduces the antenna size while enhancing return loss, gain, and bandwidth across the 3 GHz to 25 GHz frequency range. Meanwhile, the circular slot, positioned in the exponential section, minimizes excessive mutual coupling between different antenna slots. The microstrip feedline is employed as the feeding technique. The proposed antenna demonstrates its suitability for various applications as the frequency increases. Simulations are conducted using HFSS 13.0, a high-frequency structure simulator. Both the structured antipodal Vivaldi antenna and the modified version with triangular and circular slots are fabricated. Their return loss response and gain are measured and compared with simulation results.

Keywords: Voltage Standing Wave Ratio (VSWR), Antipodal Vivaldi antenna, Patch, Dielectric substrate, Microstrip feedline.

IC23-011: PUBLIC TRANSPORT TRACKING SYSTEM

[1]VIVEK B, [2]PRANAV BARATH S, [3]PRAVEEN R, [4]PRAVEEN KUMAR S
SNS COLLEGE OF TECHNOLOGY, INDIA
vivekb22@gmail.com

ABSTRACT:

In recent times, an increasing number of people are opting for public transportation due to its convenience and cost-effectiveness. The Public Transport Tracking System utilizes technologies such as GPS and other radio navigation systems, which operate via satellites and ground-based stations, to determine vehicle locations. By employing triangulation or trilateration methods, the system ensures precise and efficient location tracking. Vehicle details, including location, speed, and distance travelled, can be displayed on digital maps using specialized software via the Internet. Additionally, data can be stored and downloaded from the GPS unit at a base station for further analysis. This system serves as a crucial tool for tracking vehicles at any given time and is also gaining popularity for securing expensive cars, functioning as both a theft prevention and retrieval device.

Keywords: GPS, GSM, Embedded system, Sensors, Tracking system.

IC23-122: ALTERNATE CLASS SCHEDULING SYSTEM

[1]B BALAJI, [2]K GANESH, [3]C GOKUL, [4]VINODHINI L
SNS COLLEGE OF ENGINEERING, INDIA
balajibalaji2812@gmail.com

ABSTRACT:

This paper explores different methods for assigning alternate staff when a faculty member is absent. Many colleges rely on manual scheduling, which often leads to conflicts due to overlapping classes. To address this issue, administrators typically refer to the timetable and identify available staff for substitution. To streamline this process, we propose an automated system that considers various inputs, such as staff details, assigned subjects, previously handled subjects, and available class in-charges. Based on these inputs, the system automatically generates an alternate schedule, reducing manual effort and scheduling conflicts.

Keywords: Timetable, Web app, College alternate scheduler, Staff details, Assigned subjects.

IC23-069: HIGH-SPEED MULTIPLIER DESIGN BASED ON KOGGE-STONE ADDER

[1]R ARUN SEKAR, [2]M KATHIRVELU, [3]M GOVINDA,
[4]V KRISHNA CHAITANYA, [5]T BHAGYASRI
GMR INSTITUTE OF TECHNOLOGY, INDIA

ABSTRACT:

Multipliers serve as the core components of high-speed computational systems and are entirely composed of combinational circuits. Due to their complex circuit structure with high gate and transistor density, they occupy a large active area, leading to significant power dissipation. Minimizing power consumption in multipliers is a crucial design challenge. This study presents a high-speed multiplier design utilizing the fast parallel prefix Kogge-Stone Adder (KSA). Various adders are analyzed for speed efficiency, with Kogge-Stone outperforming other alternatives. As the Vedic multiplier is recognized for its rapid computation, this work replaces its conventional adder with the Kogge-Stone Adder, forming a hybrid high-speed Vedic multiplier. The proposed hybrid Vedic multiplier demonstrates improved efficiency in terms of power consumption, delay, and power-delay product.

Keywords: Carry Skip Adder (CSKA), Carry Look-Ahead Adder (CLA), Carry Save Adder (CSA), Carry Select Adder (CSLA), Kogge-Stone Adder (KSA), Vedic Multiplier (VM), High-Speed Computation.

IC23-197: COLLEGE WEBSITE CHATBOT

[1]T ELAKIYA, [2]J JIJI SHERIN, [3]S GOKILAPRIYA, [4]VIVEK S
SNS COLLEGE OF ENGINEERING, INDIA
elakiya1003@gmaIl.com

ABSTRACT:

A chatbot, also known as an artificial conversation entity, facilitates communication through auditory or textual interactions. Most chatbots are accessed via the internet. This system is a web application designed to effectively respond to user queries. Chatbots can be utilized on mobile devices or local systems and are particularly useful for providing information about placements and admissions. Users can freely ask questions without hesitation, and artificial intelligence helps in resolving their queries. Natural Language Processing (NLP), a branch of artificial intelligence, is integrated into chatbots and messaging applications to enhance interactions. The admin inputs relevant knowledge into the system, enabling the chatbot to generate appropriate responses when users ask related questions.

Keywords: Natural Language Processing, Artificial Intelligence, Chatbots, Web application, User queries.

IC23-035: COLLEGE WEBSITE VOICE ASSISTANT APPLICATION

[1]ANUSHRIA SAI, [2]M GANGA, [3]R S ABISREE, [4]DENY NANCY
INFO INSTITUTE OF ENGINEERING, INDIA
anushriasai@gmail.com

ABSTRACT:

In today's fast-paced technological era, we can accomplish tasks that were once unimaginable. However, to efficiently execute these tasks, an automated platform is essential. This has led to the development of Personal Voice Assistants, which interact with their surroundings through one of the most natural forms of human communication—voice. Popular voice assistant applications include Google Assistant and Google Voice Search for Android, as well as Microsoft Cortana and Amazon Alexa. Apple's Siri enables users to control their iPhones through voice commands. In this proposed system, we aim to develop a web application featuring a voice assistant specifically for a college website. This innovation enhances user interaction by allowing access to all website services through voice commands, improving convenience and accessibility.

Keywords: Voice Search, Voice Assistant, Website, College, Voice Commands.

IC23-108: HOSTEL OUTPASS TRACKING SYSTEM

[1]M SIVARANJANI, [2]L SWETHA, [3]V THENMOZHI, [4]VINOTH H
SNS COLLEGE OF ENGINEERING, INDIA

ABSTRACT:

The primary goal of the Hostel Outpass Application is to develop a comprehensive web-based system that enables students to submit an outpass form and receive approval from the designated staff and warden with a single click. Final approval is granted by the parents, ensuring that they are informed about their child's activities. This system eliminates the challenges associated with manual processing and enhances overall efficiency. Designed as a user-friendly and customizable application for hostel students, it provides seamless access to outpass information. The research allows users to input data in a simple and interactive manner, improving convenience and accessibility.

Keywords: Interactive Manner, Out Pass, Efficiency, Web-based System, Approval Process

IC23-050: REAL-TIME ALCOHOL MONITORING AND VEHICLE FAULT DETECTION USING GSM/GPRS ON AN ARDUINO-BASED SYSTEM

[1]K MADHANRAJ, [2]R MANIKANDAN, [3]K ILAVARASI, [4]S P PRIYADARSHINI
IFET COLLEGE OF ENGINEERING, INDIA
madhanrajbtechifet@gmail.com

ABSTRACT:

The Internet of Things (IoT) is a network of interconnected computing devices, mechanical and digital systems, objects, and individuals, equipped with unique identifiers that enable data transfer without requiring direct human interaction. This paper proposes an alcohol detection system designed to enhance road safety while also identifying engine faults and notifying both the driver and admin in advance. The system detects issues such as gas leaks or combustion errors and alerts relevant personnel using IoT technology. To address drunk driving concerns, an alcohol sensor is installed on the car's steering wheel to measure the driver's breath alcohol concentration. Additionally, the system monitors fuel levels and sends real-time notifications to the admin. The system is particularly beneficial for travel and cargo agencies. Its efficiency has been tested to ensure accurate functionality. By deploying this system, incidents of drunk driving-related accidents can be reduced, and vehicle owners can remotely detect fuel theft, track their vehicles continuously, and receive updates via the internet.

Keywords: ATmega328, MQ-3, Android Application, GSM/GPRS, Cloud storage.

IC23-162: INDUSTRIAL CHIMNEY LINING USING THERMAL RESISTANT GLASS BLOCK

[1]R R THARINI, [2]P SURESH BHALAJI, [3]M VELMURUGAN, [4]J ARUNRAJ
IFET COLLEGE OF ENGINEERING, INDIA

ABSTRACT:

Thermal resistance glass blocks are a specialized type of glass composed primarily of silica and boric trioxide. These blocks serve as lining materials to protect the flue cane from thermal heat exposure of up to 300°C. The lining process enhances the durability and lifespan of the flue cane. The outer concrete shell is safeguarded using bitumen paints, which provide an additional protective layer. The porous nature of the blocks prevents liquid penetration while facilitating the collection of dust emitted through the flue cane. Additionally, the blocks aid in desulphuration by absorbing sulphur content from the gases. This lining method effectively captures nearly 30% of the dust, contributing to reduced emissions into the atmosphere.

Keywords: Industrial chimney, Lining work, Thermal resistance block, Thermal stress, Desulphuration.

IC23-016: IoT-BASED SMART POWER MONITORING WITH CIRCUIT CONTROL

[1]J ASHWIN, [2]P HARINDARNATH, [3]A JANANI, [4]U SUPRIYA, [5]KALAIARASAN
SNS COLLEGE OF ENGINEERING, INDIA
jananianand19@gmail.com

ABSTRACT:

Monitoring and tracking power consumption manually is a tedious task, as it requires visiting the meter reading room and recording the data. However, verifying accurate billing is essential. To address this, we propose an automated system that allows users to monitor smart reading of energy meters via the internet. The system integrates an energy meter with a microcontroller to track power consumption. It records the units consumed and transmits both the consumption data and the corresponding cost online through a Wi-Fi connection. This enables users to conveniently check their energy usage and billing details through a simple web page. Additionally, the circuit controllers act as protective breakers, cutting off power supply in the event of sudden voltage surges, thereby preventing circuit damage and failures.

Keywords: Smart reading, Bridge Rectifier, Transformer, Arduino UNO, Web page

IC23-088: ODD ONE OUT DETECTION USING MACHINE LEARNING ALGORITHMS

[1]RUTHRAN E, [2]SASI MOHAN C, [3]SAVITHA V, [4]DR T KALAIKUMARAN
SNS COLLEGE OF TECHNOLOGY, INDIA

ABSTRACT:

The Odd-Man-Out problem is a unique task designed to analyze different properties of number representations. It consists of a set of five or more numbers, where one number does not belong to the same function as the others. The system must identify this odd number. Classification problems, such as "find the odd one out," are widely used to assess inductive reasoning in both humans and animals. This paper presents a systematic approach to developing algorithms for solving the Odd-Man-Out problem using machine learning algorithms. The proposed solution employs Cosine Transformation and the Support Vector Machine Algorithm (SVM) to accurately determine the number that differs from the given set.

Keywords: Odd Man Out, Support Vector Machine Algorithm, Cosine Transformation, Inductive Reasoning, Machine Learning Algorithms.

IC23-200: IoT-BASED SMART GARBAGE SEGREGATION FOR RECYCLING

[1]VAISHNAVI H, [2]YAMUNA J, [3]S P PRIYADHARSHINI
IFET COLLEGE OF ENGINEERING, INDIA
vaishnaviit15@gmail.com

ABSTRACT:

The increasing population growth presents a major challenge at the municipal level in waste management. This system is designed to automatically segregate garbage into metal and non-metal categories using a photo optic sensor and an inductive sensor mounted on a conveyor belt. The sorted waste is then stored in separate bins. To prevent garbage overflow, the system sends real-time alerts to the municipal authorities via a microcontroller connected to a web server using IoT technology. Additionally, the system includes a verification process after bin cleaning. The ultrasonic sensor measures the garbage level by detecting the distance of the nearest obstacle. An Arduino UNO microcontroller reads this data and is programmed to send alerts to the ThingSpeak web server when the garbage level reaches a predefined threshold. If the bin is between 0%-70% full, a graphical display updates the fill level. If it exceeds 70%, a buzzer activates at every 10% increment to notify authorities, prompting garbage collection.

Keywords: Photo Optic Sensor, Inductive Sensor, Arduino UNO, Wi-Fi, Ultrasonic Sensor.

IC23-025: ROOM TEMPERATURE ALERT SYSTEM

[1]S SUSHMITHA, [2]P PRABA VARTHINI, [3]S P PRIYA DHARSHINI
IFET COLLEGE OF ENGINEERING, INDIA

ABSTRACT:

The primary goal of this research is to prevent server room fires caused by overheating. This system is developed as an embedded system using an Arduino microcontroller and a GSM (Global System for Mobile Communications) module. Server rooms house various equipment, including hardware, racks, cabling, power supplies, and UPS units, making temperature monitoring crucial. The system continuously tracks the temperature of the server room, and if it exceeds a predefined limit, notifications are sent via SMS and calls. A temperature sensor detects changes, while an LCD (Liquid Crystal Display) displays the current temperature status. Additionally, a buzzer provides an audible alert within the server room to indicate overheating. This system ensures timely notifications to prevent potential fire hazards.

Keywords: Liquid Crystal Display, GSM, Buzzer, Temperature Sensor, Arduino Microcontroller.