MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

Autonomous Institution – UGC, Govt. of India

Accredited by NBA & NAAC with 'A+' Grade

NIRF Indian Ranking, Accepted by MHRD, Govt. of India | Band – Excellent, National Ranking by ARIIA

Maisammaguda, Dhulapally, Secunderabad – 500 010, Telangana

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Under
Student Chapter IEEE, IETE & Technical Association Electro Spikes

TECHNITRONIX

HALF-YEARLY TECHNICAL MAGAZINE

DEPARTMENT OF
ELECTRONICS AND COMMUNICATION ENGINEERING

E C E

Editorial Board members

- ❖ Dr. Y. Madhavee Latha, Principal,Chairperson
- ❖ Dr. Sudhakar K, HOD
- ❖ Dr. N.L.Aravinda , Assoc.Professor
- ❖ Mr.S.Srikanth , Assistant Professor

DEPARTMENT VISION

• To establish the Department of Electronics and Communication Engineering as a center of excellence, nurturing a culture of innovation, continuous learning and research.

• To impart students with a strong foundation in technical knowledge, practical skills, analytical thinking, and problem-solving abilities., empowering them to contribute to technological advancements and enhance the quality of life in society.

Vision

DEPARTMENT MISION

• To create an academic environment that empowers students with strong technical knowledge and critical thinking abilities essential for success in the field of electronics and communication engineering.

• To inculcate a culture of innovation and research, enabling our graduates to effectively contribute to technological advancements and meet the constantly changing demands of industry and society.

• To Impart technical education with a strong emphasis on dignity, decency, and discipline to develop professional engineers who are both technically competent and socially responsible.

Mission

ABOUT THE DEPARTMENT

The Department of Electronics and Communication Engineering (ECE), with an intake of 120 students in the B.Tech program, also offers an M.Tech program in Embedded Systems.

The department features state-of-the-art laboratories equipped with the latest software, including CADENCE, MATLAB, XILINX, CCSTUDIO, KEIL, RTOS, RT Linux, OSCAD, PSPICE, and Multisim etc. It has been recognized as a Research & Development (R&D) Center by JNTUH. The department is supported by a team of well-qualified and experienced faculty members with 100% ratification.

The department has established IEEE, IETE, and ISTE student chapters, under which it organizes the National Level Technical Symposium – FUTURE SASTRA and the State Level Technical Symposium – MEDHA every academic year. Additionally, it publishes the technical e-magazine "TECHNITRONIX," the newsletter "ELECTROPULSE," and the project magazine "CIRCUITS AND INNOVATIONS."

The department regularly organizes the International Conference on Signal Processing, Communications, and System Design (ICSPCOM-SD). It also conducts Short-Term Training Programs (STTPs) and Faculty Development Programs (FDPs) on emerging technologies.

To enhance students' overall performance, the department holds weekly student seminar sessions (two hours per week) for B.Tech students from the first to fourth year. It also offers value-added certification courses such as CISCO certification through the Center for Development of Communication Skills. Additionally, the college provides Campus Recruitment Training (CRT) programs in collaboration with TIME and Coign Institutions.

The department has received MODROBS funding from AICTE for the establishment of VLSI Lab and Advanced Communications Lab. Furthermore, the department publishes a registered journal, "International Journal of Research in Signal Processing, Computing, and Communication-System Design (IJRSCSD)," with ISSN: 2395-3187.

PO'S

PO1	Engineering knowledge	An ability to apply knowledge of mathematics (including probability, statistics and discrete mathematics), science, and engineering for solving Engineering problems and modeling
PO2	Problem analysis	An ability to design, simulate and conduct experiments, as well as to analyze and interpret data including hardware and software components
PO3	Design / development of solutions	An ability to design a complex electronic system or process to meet desired specifications and needs
PO4	Conduct investigations of complex problems	An ability to identify, formulate, comprehend, analyze, design synthesis of the information to solve complex engineering problems and provide valid conclusions.
PO5	Modern tool usage	An ability to use the techniques, skills and modern engineering tools necessary for engineering practice
PO6	The engineer and society	An understanding of professional, health, safety, legal, cultural and social responsibilities
PO7	Environment and sustainability	The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental and demonstrate the knowledge need for sustainable development.
PO8	Ethics	Apply ethical principles, responsibility and norms of the engineering practice
PO9	Individual and team work	An ability to function on multi-disciplinary teams.
PO10	Communication	An ability to communicate and present effectively
PO11	Project management and finance	An ability to use the modern engineering tools, techniques, skills and management principles to do work as a member and leader in a team, to manage projects in multi-disciplinary environments
PO12	Life-long learning	A recognition of the need for, and an ability to engage in, to resolve contemporary issues and acquire lifelong learning

PSO'S

The graduates of the department will attain:

PSO1: The ability to analyze, design and implement application specific electronic system for complex engineering problems for analog, digital domain, communications and signal processing applications by applying the knowledge of basic sciences, engineering mathematics and engineering fundamentals.

PSO2: The ability to adapt for rapid changes in tools and technology with an understanding of societal and ecological issues relevant to professional engineering practice through life-long learning

PSO3: Excellent adaptability to function in multi-disciplinary work environment, good interpersonal skills as a leader in a team in appreciation of professional ethics and societal responsibilities.

PEO'S

PEO1-PROFESSIONAL DEVELOPMENT
To develop in the students the ability to acquire knowledge of Mathematics, Science & Engineering and apply it professionally within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability and sustainability with due ethical responsibility.

PEO2-CORE PROFICIENCY
To provide ability to identify, formulate and solve engineering problems with hands on experience in various technologies using modern tools necessary for engineering practice to satisfy the needs of society and the industry.

PEO3- TECHNICAL ACCOMPLISHMENTS
To equip the students with the ability to design, experiment, analyze and interpret in their core applications through multi disciplinary concepts and contemporary learning to build them into industry ready graduates.

PEO4- PROFESSIONALISM
To provide training, exposure and awareness on importance of soft skills for better career and holistic personality development as well as professional attitude towards ethical issues, team work, multidisciplinary approach and capability to relate engineering issues to broader social context.

PEO5- LEARNING ENVIRONMENT
To provide students with an academic environment and make them aware of excellence, leadership, written ethical codes and guidelines and the life-long learning to become a successful professional in Electronics and Communication Engineering

MESSAGES

Founder Chairman's Message

MRECW has made tremendous progress in all areas and now crossing several milestones within a very short span of time and now I feel very happy to know that the students and faculty of the ECE department of MRECW are bringing out the volume-2 of the Technical magazine Technitronix in A.Y 2023-24. As I understand this magazine is intended to bring out the inherent literary talents in the students and the teachers and also to inculcate leadership skills among them. I am confident that this issue will send a positive signal to the staff, students and the persons who are interested in the educational and literary activities

Ch. Malla Reddy
Founder Chairman, MRGI
Hon'ble Minister, Govt. of Telangana State

Principal's Message

I congratulate the department of ECE, MRECW for bringing out the issue of the prestigious quarterly department technical Magazine Technitronix under A.Y: 2023-24, I am sure that the magazine will provide a platform to the students and faculty members to expand their technical knowledge and sharpen their hidden literary talent and will also strengthen the all round development of the students. I am hopeful that this small piece of literary work shall not only develop the taste for reading among students but also develop a sense of belonging to the institution as well. My congratulations to the editorial board who took the responsibility for the arduous task most effectively. I extend best wishes for the success of this endeavor.

Dr. Y. Madhavee Latha
Principal

HOD'S MESSAGE

It is an occasion of great pride and satisfaction for the department of ECE, MRECW to bring out the issue of the quarterly of the Technical magazine Technitronix under A.Y:2023-24, it gives me immense pleasure to note that the response to the magazine has been over whelming. The wide spectrum of articles gives us a sense of pride that our students and faculties possess creative potential and original thinking in ample measures. Each article is entertaining interesting and absorbing. I applaud the contributors for their stimulated thoughts and varied hues in articles contributed by them

Dr . K. Sudhakar
HOD

SCIENTIST OF THE HALF YEAR

RAJWSHWARI CHATTERJEE

Rajeshwari Chatterjee was an Indian scientist and academic, and the first woman engineer from Karnataka. She contributed to the scientific and engineering communities, and served as a venerable educator. She became the Chairmen for the Department of Electro-communication Engineering at the Indian Institute of Sciences. Madam Rajeshwari was born January 24th, 1922 to a upper class family in Nanjanagud near Mysore, Karnataka in India. During this time period in India's history, it was rare for women to receive an education. Women often weren't given the opportunity to pursue their own desires, and were forced to abide by cultural norms. However, she belonged to a wealthy family, and was able to pursue her educational interests in the "Special English School" set up by her grandmother Kamalamma Dasappa, who was a social reformer for women in India. After India received its independence on August 15th, 1947, the Government of India invited applications for scholarships to pursue higher studies aboard, with the condition to serve the nation for three years after completing one's education. Rajeshwari took the opportunity to study at the University of Michigan with a scholarship to complete her Masters in Electrical Engineering, receiving her Ph.D in 1954. She arrived back to India to serve her time in the Indian Institute of Science as faculty in Electrical Engineering. Chatterjee became a professor and received the position of Chairman in the Department of Electrical Communication Engineering. Teaching electromagnetic theory, and experimenting on electron tube circuits and microwave technology, she guided 20 Ph.D students while publishing over 100 research papers and seven books on Microwave Engineering and Antennas. She had won numerous awards for her contributions, and retired in 1982. After retirement she started working within social programs, mainly with the Indian Association for Women's Studies, addressing many issues on caste segregation, gender discrimination, and peoples who suffer from poor financial backgrounds.She passed away on September 3rd, 2010.

DATA PRIVACY IN COMMUNICATION SYSTEM
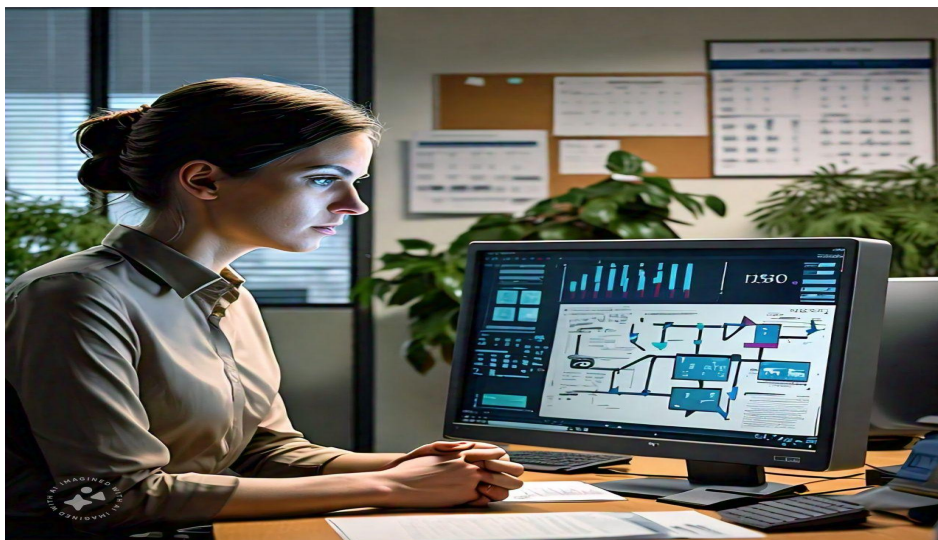
Data privacy in communication systems is crucial for protecting personal and sensitive information from unauthorized access, interception, or exploitation. Effective measures include encryption, secure protocols (HTTPS, SSL/TLS), and Virtual Private Networks (VPNs). Encryption scrambles data, making it unintelligible to unauthorized parties.Access control and authentication ensure only authorized users access sensitive data. Data anonymization and pseudonymization protect user identities. Regular security audits and updates prevent data breaches. Compliance with data protection regulations (GDPR, HIPAA) ensures accountability.Communication service providers must prioritize data privacy, transparency, and user consent. Users should be aware of data collection, storage, and sharing practices. Emerging technologies like quantum cryptography and homomorphic encryption offer enhanced data privacy solutions.Threats to data privacy include interception and eavesdropping, malware and spyware, phishing and social engineering, data breaches and leaks, and surveillance and monitoring. To mitigate these risks, individuals and organizations must adopt robust security measures and best practices.Key components of data privacy in communication systems include secure data transmission, storage protection, access control, data minimization, and user consent. By implementing these measures, individuals and organizations can safeguard sensitive information and maintain trust in communication systems.

MANNE PRIYANKA
Department of ECE

ADVANCES IN RADER TECHNOLOGY

Radar technology has undergone significant advancements, transforming its capabilities and applications. Phased array radar replaces mechanical antennas with electronic scanning, enabling faster tracking and improved accuracy. Active Electronically Scanned Array (AESA) radar uses active elements to transmit and receive signals, increasing reliability and performance.Synthetic Aperture Radar (SAR) uses radar pulses to create high-resolution images, day or night, regardless of weather conditions. SAR applications include terrain mapping, land surveillance, and disaster response. Millimeter-wave radar operates at higher frequencies, providing higher resolution and accuracy, with applications in automotive radar, security scanning, and medical imaging.LiDAR (Light Detection and Ranging) uses laser pulses to create high-resolution 3D images, enabling precise distance measurement and object detection. LiDAR applications include autonomous vehicles, surveying, and robotics. Cognitive radar adapts to changing environments, adjusting frequency and waveform to optimize performance.Quantum radar leverages quantum computing and entanglement to detect and track targets with unprecedented accuracy. Quantum radar promises breakthroughs in stealth detection and advanced surveillance. Advances in signal processing algorithms and computing power enable improved radar performance.Radar technology advancements have expanded applications across military and defense, aviation and aerospace, automotive and transportation, weather monitoring and climate research, medical imaging and diagnostics, and industrial inspection and surveillance. Future radar technology developments will focus on integration with AI and machine learning, quantum computing, advancements in materials and manufacturing, and expanded applications in emerging fields.

DR ABDUL RAHIM
Department of ECE

SMART GRID TECHNOLOGIES

Smart grid technologies integrate advanced infrastructure, information technology, and renewable energy sources to enhance efficiency, reliability, and sustainability. This innovative approach enables real-time monitoring, predictive analytics, and secure data exchange, revolutionizing the way energy is distributed and consumed.Advanced infrastructure components include smart meters, smart appliances, and smart substations that monitor and manage energy distribution. High-voltage direct current transmission and flexible AC transmission systems optimize power flow, ensuring a stable and resilient grid.Information technology plays a vital role, leveraging IoT, AI, and blockchain to facilitate secure data exchange and grid management. Wide-area measurement systems and supervisory control and data acquisition systems provide real-time insights for optimized decision-making.Smart grids seamlessly integrate solar, wind, and geothermal energy sources, optimizing power generation and distribution. Energy storage systems, such as batteries, stabilize the grid and ensure a reliable energy supply.Key features of smart grids include self-healing networks, advanced metering infrastructure, demand response management, electric vehicle charging infrastructure, and robust cybersecurity measures. These features combine to enhance efficiency, improve reliability, and increase renewable energy integration.The benefits of smart grids are numerous, including reduced energy losses, enhanced customer engagement, and improved overall grid resilience. However, challenges remain, such as infrastructure upgrades, cybersecurity threats, data management, interoperability, and regulatory frameworks.As smart grid technologies continue to evolve, future developments will focus on integrating emerging technologies like 5G and quantum computing, expanding energy storage solutions, developing microgrids, and enhancing customer-centric approaches.

DR DEEPIKA GADE
Department of ECE

STUDENT ARTICLES

ADVANCED SUREILLANCE ROBOT

The present world everyone is in need about the safety due to increase in crime rate this has led to an increase in importance of surveillance system. Surveillance is the monitoring of behavior activities or other changing information usually of people for the purpose of influencing, managing, directing or protecting them .Project is to design and build a manually controlled surveillance robot. The main purpose of the robot is to be able to roam around in a given environment while transmitting back real time data (video) to the ground station. This real time data can then be used by the controller (human) to move the robot around. This robot is mainly designed for army operations which has robotic arm in front to do pic and place operation and etc which is very useful for ARMY application and INDUSTRIAL applications. This Report presents the development and implementation of an advanced surveillance robot integrated with a sophisticated land mine detection system. The robot is equipped with a multi-sensor array, including groundpenetrating radar (GPR), metal detectors, and infrared sensors, to accurately detect and locate various types of land mines. The fusion of these sensors enables the robot to differentiate between metallic and nonmetallic mines, thereby reducing false positives and increasing detection reliability.

K.HARITHA (21RH1A04D1)
M.SANJANA (21RH1A04E7)
M.SHIRISHA (21RH1A04E8)

ENHANCING PEOPLE SAFETY ON BUSES THROUGH EMBEDDED SOULTIONS

Ensuring the safety of people on buses is a critical concern, as incidents such as falls or accidents can lead to serious injuries. The "Enhancing People Safety on Buses Through Embedded Solutions" project aims to address this issue by developing an integrated safety system using embedded technologies. The system employs an ESP8266 microcontroller to connect various sensors and devices, including weight sensors, accelerometers, buzzers, and LEDs. The weight sensors monitor the occupancy and weight distribution on the bus seats, while the accelerometer detects sudden movements or impacts. The ESP8266 processes the data and triggers alerts through buzzers and LEDs in case of irregularities. Additionally, the system uses IoT technology for real-time monitoring and remote notifications to bus operators and higher authorities. This comprehensive solution enhances the safety of people by providing immediate alerts and facilitating proactive interventions.

M.NIHARIKA (21RH1A04F7)
M.MEGHANA (21RH1A04F5)
L.VARSHINI (21RH1A04D6)

VECHILE SECURITY & FUEL INDICATOR

This project presents an integrated vehicle security and fuel indicator system designed to enhance vehicle safety and provide real-time fuel monitoring. The solution addresses two critical areas: protection against unauthorized access and precise fuel level tracking to prevent unexpected breakdowns due to fuel shortages. The security module incorporates technologies such as RFID, fingerprint sensors, or GSM-based authentication to restrict vehicle access to authorized users only. In case of unauthorized access attempts, the system triggers an alarm and can notify the vehicle owner via SMS or mobile application, enhancing theft prevention. The fuel indicator module provides accurate real-time monitoring of the fuel level using sensors integrated with the vehicle's dashboard. It displays the remaining fuel quantity and alerts the driver through visual or sound notifications when the level drops below a critical threshold. Advanced versions of the system can also estimate mileage based on fuel consumption patterns, helping users manage fuel usage efficiently.

A.MEGHANA (22RH1A0401)
B.SANDHYA (22RH1A0402)
B.SHRAVANI (22RH1A0403)

AMAZON WEB SERVICE

Title : Amazon web service

Abstract : Cloud Computing is a recently emerged model which is becoming popular among almost all enterprises. It involves the concept of on demand services which means using the cloud resources on demand and we can scale the resources as per demand. Cloud computing undoubtedly provides unending benefits and is a cost effective model. The major concern in this model is Security in cloud. This is the reason of many enterprises of not preferring the cloud computing. This paper provides the review of security research in the field of cloud security. After security research we have presented the working of AWS (Amazon Web Service) cloud computing. AWS is the most trusted provider of cloud computing which not only provides the excellent cloud security but also provides excellent cloud services. The main aim of this paper is to make cloud computing security as a core operation and not an add on operation.

Reference link : https://ieeexplore.ieee.org/document/7079135/

G.SAI SRI
22RH1A0447
II-ECE-A

SELF DRIVING CARS

Title : Self Driving cars

Abstract : The future cars are more dependent on the internet. It is all-electric and independent, where both the knowledge is equally required. The expanded requirement for safe electronic frameworks in vehicles, that drivers and travelers can depend on, are the underpinning of trust and shape the future towards more elevated levels of robotized driving. The effective and business utilization of self-driving/driverless/automated/computerized vehicle will make human existence more straightforward. This article discusses about this challenge. This paper surveys the vital innovation of a self-driving vehicle. In this paper, the four vital advances in self-driving vehicle, in particular, red and green light detection, object detection, lane end detection and stop sign detection, are tended to and overviewed. The principal research establishments and bunches in various nations are summed up. At last, the discussions of self driving vehicle are talked about and the improvement pattern of self-driving vehicle is anticipated.

Reference link : https://ieeexplore.ieee.org/document/8220479

D.ANJANI
23RH1A0430
II-ECE-A

LASER COMMUNICATION

Title : Laser communication

Abstract : Laser communication is an optical wireless communication, envisioned to be the next generation wireless communication technology due to its inherent characteristics like increased bandwidth, high data rate, security, immunity to interference, unregulated spectrum etc. Lasercom is a better alternative to conventional communication schemes due to its potential features; terahertz transmission, small Size, Weight and Power (SWaP) components, that which are critical factors in designing space missions. The laser transmit beam however is degraded by atmospheric factors and stringent requirement of line of sight communication results in pointing losses. Lasercom is thus constrained of implementing it in its full potential due to these factors. Therefore unlike RF communication, designing and testing the lasercom system is a complex task, as it needs to take into account many factors related to the conditions that will pertain during the laser communication. These factors are stochastic atmospheric parameters, coordinates of installing the transmitter and receiver, time of commencing the transmission et al. This necessitates the need for a modeling to carry out a virtual laser communication so as to evaluate and optimize the system design. Laser communications systems are wireless connections through the atmosphere.

Reference link : https://ieeexplore.ieee.org/document/8357234

A.SREEJA
23RH1A0404
II-ECE

ADVANCED GPS TRACKING AND FOOD DISPENSER SYSTEM FOR PETS

An advanced GPS tracking and automated food dispenser system for pets integrates modern technology to enhance pet care, particularly for owners who are away from home. This system leverages GPS technology to monitor the real-time location of pets, providing peace of mind by ensuring they remain within safe boundaries or helping track them if they wander off. Additionally, the system is equipped with an automated food dispenser, which can be programmed to dispense meals at scheduled intervals or controlled remotely through a smartphone app. This ensures that pets are fed on time, even when the owner is not physically present, maintaining their regular feeding schedule and portion control. The system can also include features like water dispensers, treat rewards for positive behavior, and health tracking, where the pet's activity levels and food intake are monitored to support their overall well-being. By integrating GPS tracking with an automated food dispenser, the system offers a comprehensive solution for pet safety, health, and convenience, allowing owners to care for their pets efficiently from a distance

SANJANA SINGH -21RH1A04M9
T.NAVYA   -21RH1A0P4
U.SAI TRINISHA -21RH1A04Q6

AUTOMATION OF ELECTRONIC DEVICES WITH GESTURE CONTROLLING GLOVES
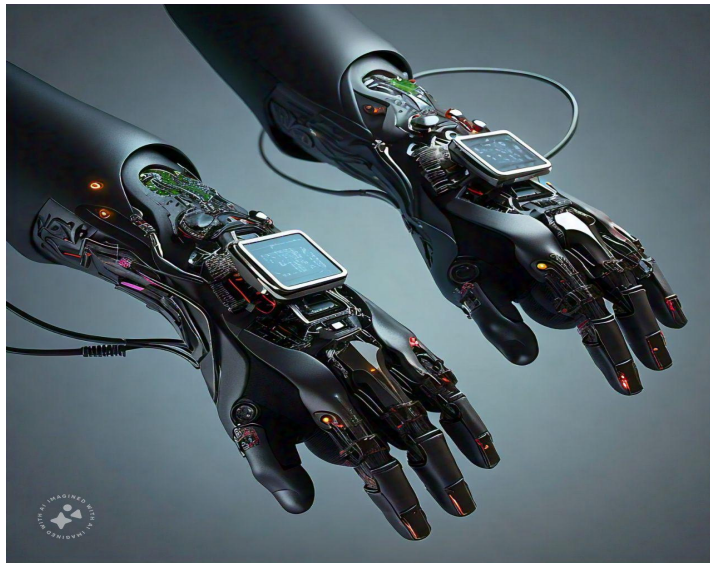
Gesture-controlled gloves offer an innovative and intuitive way to automate and control electronic devices. These gloves are equipped with various sensors, including flex sensors, inertial measurement units (IMUs), and touch sensors, that detect hand movements and gestures. The data from these sensors are processed by a microcontroller, which interprets the gestures and sends corresponding commands to the electronic devices. Communication between the gloves and the devices is typically established via wireless technologies such as Bluetooth or Wi-Fi.This system allows for hands-free control of home appliances, industrial equipment, and even medical devices, enhancing convenience, accessibility, and safety. By incorporating machine learning algorithms, the gloves can improve gesture recognition over time, offering a personalized and adaptable user experience.

VENNELA
22RH1A0454
III-ECE

AUTOMATIC FIRE FIGHTING ROBOTIC VEHICLE

Fire incidents are disasters that can potentially lead to the loss of life and property. It can also cause damage and permanent disability to the affected victim. Firefighters are primarily tasked to handle fire incidents, but they are often exposed to high risks when extinguishing the fire, especially in a hazardous area . The development of a fire extinguishing robot with an SMS alert feature that can sound an alarm to occupants of the building, send an alert SMS message to the registered phone number, and also proceed to extinguish the fire unmanned. It is designed to be compact for ease of movement into narrow spaces. The robot is equipped with an ultrasonic sensor to avoid collision with any obstacle and surrounding objects, while the flame sensor was used to detect the fire. This developed autonomous system demonstrates the capabilities of identifying fire locations automatically and extinguishes the fire using the stored water in the container on it .This project leverages Arduino technology to create a sophisticated autonomous robot capable of detecting fire using three fire sensors and an ultrasonic sensor for navigation. The robot is equipped with a servo motor to enable precise control of a water pump for fire suppression. Upon detecting a fire, the robot initiates the water pump, aiming to extinguish the flames. Simultaneously, a buzzer alerts nearby individuals to the emergency situation .To enhance the communication aspect, the robot incorporates a GSM (Global System for Mobile Communications) module. In the event of a fire detection, the robot utilizes the GSM module to send alert messages to predefined contacts, providing real-time information about the fire incident

P SRINIDHI
23RH5A0406
III-ECE

TRAFFIC CONTROL WITH AMBULANCE DETECTION

This project proposes an advanced traffic control system integrated with ambulance detection using embedded systems, aimed at significantly improving emergency response times. Urban traffic congestion poses a major challenge for ambulances, often delaying critical medical assistance. To address this issue, our system utilizes a combination of sensors and microcontrollers that detect approaching ambulances equipped with RFID tags When an ambulance approaches, the system automatically adjusts nearby traffic signals to create a clear and unobstructed path. This process involves real-time monitoring of traffic conditions and dynamic signal adjustments based on the proximity of the emergency vehicle. By prioritizing the movement of ambulances, the system can effectively reduce the time spent in traffic, thereby enhancing the overall efficiency of emergency responses . The proposed solution includes a user- friendly interface for traffic management personnel, enabling real-time monitoring and control of traffic flow. This interface provides visual feedback on the status of traffic signals and the location of ambulances, facilitating better coordination between emergency services and traffic authorities.

K.VANDANA
22RH1A04C6
IV-ECE-B

CROP SHIELD SYSTEM

Agriculture has always been the primary and most important sector of the Indian economy. Farmers are the backbone of one's country, Farmers cannot take care of their farms 24x7 so when farmer is far away from the field, he cannot take care of his form so this which cause in the production of the yield when the animals like buffaloes or cows and some animals from nearby forest areas may enter the field and destroy it. There are many loopholes in such ideas and so improvising agricultural security has become a major issue these days. Thus, this project focuses on proposing a system that detects intruders, monitors any suspicious activity and then reports to the owner of the field with the PIR sensor and Arduino will be activated and buzzer will sound to get rid of animal entering the field simultaneously LED lights will flash and send message to the farm[-[-er within 10 seconds of the detection of the animal. It acts as an adaptable system which is a practicable system to the farmers for ensuring complete safety of their farmlands from any attacks or trespassing activities and additional to it a smoke sensor to identify the smoke produced from the fire and a soil moisture sensor to detect the volumetric water content in the soil. Traditional systems like humanoid scarecrows are used even today in an agricultural field to stop birds and animals from disturbing and feeding on growing crops. There are many loopholes in such ideas and so enhancing agricultural security has become a major issue these days. Thus, this project focuses on proposing a system which detects the intruders, monitors any malicious activity and then reports it to the owner of the system. It acts as an adaptable system which provides a practicable system to the farmers for ensuring complete safety of their farmlands from any attacks or trespassing activities.

A.SOWMYA (22RH1A0408)
B.SANDHYA (22RH1A0430)
D.APOORVA (21RH1A0460)

VOICE CONTROLLED ROBOTIC VECHILE

Humans have always been at the top of the animal kingdom. It's a privilege we are all grateful for, but wouldn't it be marvelous if we could substitute our chores for some leisure time? We can start by deploying small functional autonomous cars. Autonomous cars are the elementary steps of progress towards advancement in IoT and Artificial Intelligence. In this paper, we present the idea of a low-cost autonomous vehicle, which will be controlled by voice commands, given by the user. The user may be located at some remote location, but as long as he/she is connected to the Internet, the vehicle will follow voice instructions. The idea is implemented through Node MCU ESP866, Adafruit, and IFTTT. The instructions are fed to the vehicle through

Google Assistant.

GUNDEDI SAHITHI
20RH1A0489
IV ECE B

FOREST MONITORING SYSTEM USING IOT

Forest fires pose a significant threat to ecosystems, biodiversity, and human settlements worldwide. Timely detection and response are critical in mitigating their devastating effects. In this study, we propose a comprehensive Forest Monitoring System (FMS) integrated with a Fire Alert System (FAS) to enhance early detection and response to forest fires. The FMS incorporates various sensors such as temperature, humidity, and smoke detectors, deployed strategically throughout the forest area. These sensors continuously monitor environmental conditions and transmit data to a central server for real-time analysis. Additionally, the FMS utilizes satellite imagery and aerial drones to provide comprehensive coverage and enhance detection accuracy. The FAS utilizes advanced algorithms to analyze data from the FMS and identify potential fire outbreaks. Upon detection of abnormal environmental conditions indicative of a fire, the system triggers automatic alerts to relevant authorities and stakeholders. These alerts include precise location information, allowing for swift and targeted response efforts.

K.GAYATHRI   -21RH1A04D3
N.NIHARIKA   -21RH1A04H4
M.MAHESHWARI -22RH5A0418

LOCKER SECURITY SYSTEM

In today's world, security becomes a very important issue. everyone is concerned about the safety of their valuables like jewellery, money, important documents etc. Due to the increasing rate of criminal approach it becomes difficult to ensure security of the valuables. We need our home and offices so secure, So the purpose of this system is to provide a secured locker security system based on GSM, IR SENSOR, FINGERPRINT and BUZZER technology which can be secured offices and homes. This system allows authentic person only can be recovered money or anything from locker. This circuit will help you to quard your precious documents as well as jewellery form theft. All you need is to place this circuit in front of the locker so when any unknown person come and try to open the locker the sound of alarm come and notification also comes to our phone. The main benefit of the circuit is that the theft can easily identify

G.SAVITHRI (23RH1A0402)
D.TEJASREE (22RH1A0422)
BHANU (23RH5A0403)

IOT BASED PATIENT MONITORING SYSTEM

The Internet of Things (IoT) has revolutionized healthcare by enabling continuous patient monitoring, improving care delivery, and enhancing patient outcomes. This paper presents an IoT-based patient monitoring system designed to track vital signs such as heart rate, body temperature, and oxygen saturation in real-time. The system leverages wearable sensors connected to a cloud platform, allowing healthcare providers to access patient data remotely and promptly respond to anomalies. Data analytics and machine learning algorithms are integrated to predict potential health issues, facilitating early intervention. The proposed solution not only enhances patient safety but also optimizes resource allocation in healthcare facilities. Through a case study, we demonstrate the system's effectiveness in improving patient management and reducing hospital readmission rates. The findings suggest that IoT-based monitoring can significantly transform traditional healthcare practices, paving the way for smarter, more responsive healthcare systems.

J.KARUNA SRI
21RH1A04A7
IV ECE B

INTELLIGENT HELMET SYSTEM FOR ACCIDENT PREVENTION AND BIKE STARTER

The Intelligent Helmet System for Accident Prevention and Bike Starter Control is designed to enhance rider safety by integrating advanced sensors within a helmet and motorcycle. The system ensures that the bike will not start unless the rider is wearing the helmet, detected by a pressure sensor. Additionally, an alcohol sensor checks whether the rider is sober; if alcohol is detected, the bike remains immobilized. This system not only prevents accidents caused by negligence, such as riding without a helmet or under the influence of alcohol, but it can also detect impacts in the event of an accident. Upon detecting a crash, the system can send emergency alerts to pre-registered contacts, providing timely assistance. This solution promotes responsible riding behavior and contributes to reducing road accidents involving motorcyclists.The system is controlled by an Arduino microcontroller, which acts as the central processing unit for gathering data from the sensors. It processes the inputs and ensures that the bike's motor, connected through a relay system, remains off unless the safety conditions are met. In addition to preventing the bike from starting under unsafe conditions, the system can also detect crashes or impacts, which can be used to trigger emergency alerts, providing crucial help when needed. By integrating these components—IR sensor, alcohol sensor, motor, and Arduino—the intelligent helmet ensures rider safety, reduces the chances of accidents, and encourages responsible driving practices.

B.SREEJA (21RH1A0434)
B.GREESHMA (21RH1A0437)
B.LIKHITHA (2RH1A0439)

FIRE FIGHTING ROBOT

There is no doubt that firefighting is an important job, but it is also a very dangerous occupation. The absence of human beings in detection of fire usually leads to a huge damage. This project aims to design a firefighting robot that can operate remotely. The development of Fire Fighting Robot consists of two elements i.e., hardware and programming. The prototype robot has four 100 rpm Battery Operated motors for driving system. Additionally, ATmega328P microprocessor also interfaces with various sensors namely MQ2 gas sensor, Flame sensor as feedback to the robot. With the assistance of a microcontroller, each guidance for controlling movement is given to the robot, with this assistance the robot can douse the fire. This paper illustrates the working and modelling of an Automated Fire Fighting Robot prototype. Robots can be defined Robots can be defined as machine resembling a human being but capable of performing complex assignments. In hazardous jobs like firefighting robots can be of significant service.

LAGISHETTY ALEKHYA
20RH1A04D5
IV ECE B

HEARTBEAT MONITORING AND ALERTING SYSTEM

The state of the heart, the average body temperature, and the amount of oxygen in the body are the three most crucial factors to take into account while thinking about health. Since the heart is the fundamental component of the human body, it is given more weight in this proposed work. Heart-related characteristics include heart rate, ECG, and blood oxygen content. A person's body temperature is also taken into account when determining their degree of health. This study discusses a new model that is a synchronized version of the traditional system. It will be taking measurements of body temperature, heart rate, SPO2, ECG, and other characteristics.It will be reasonably lightweight, convenient to use, affordable, and portable. THEO will be working on the Internet of Things (IoT), which will communicate the readings of the body temperature, heart rate, blood oxygen concentration, and ECG to the cloud server via Wi-Fi (802.11) for bidirectional communication. Afterwards, family members or medical professionals can check the measurement results on the cloud server and provide evidence for the patient's health. It could also be applied to recurring, standard examinations.

A.RAJESHWARI (21RH1A0417)
B.SREEJA (21RH1A0434)
CH.POOJITHA (21RH1A0448)
CH,NEHA (21RH1A0449)

FOOD CONTAMINATION DETECTION OVER GSM

This paper presents an approach based on radio frequency identification (RFID) and machine learning for contamination sensing of food items and drinks such as soft drinks, alcohol, baby formula milk, etc. We employ sticker-type inkjet printed ultra-high-frequency (UHF) RFID tags for contamination sensing experimentation. The RFID tag antenna was mounted on pure as well as contaminated food products with known contaminant quantity. The received signal strength indicator (RSSI), as well as the phase of the backscattered signal from the RFID tag mounted on the food item, are measured using the Tagformance Pro setup. We used a machine-learning algorithm XGBoost for further training of the model and improving the accuracy of sensing, which is about 90%. Therefore, this research study paves a way for ubiquitous contamination/content sensing using RFID and machine learning technologies that can enlighten their users about the health concerns and safety of their food.

M.HARINI (21RH1A04F2)
P.SHIVANI (21RH1A04H8)
P.DHARANI (21RH1A04J4)

IOT BASED SMART PLANT MONITORING SYSTEM

we can see in today's world only some devices like PC's and mobiles are connected to internet. Now-adays world is fully overtaken by the internet and internet of things. Internet is use for basic need of all human beings. The Internet of Things (IOT) is the network of physical objects. It simply means to monitor a physical device or machine or it is inter-networking of physical devices which is embedded with electronics, sensors, software and network connectivity to enable it to achieve greater value and services by exchanging data with the manufacturer Agriculture is the backbone of our country; most of the people depend on agriculture. The main issue in agriculture is water scarcity. The water resource is not used in an effective manner, so the water is wasted. In order to overcome this irrigation process can be automated. The use of Internet of things in this field will be helpful to reduce the wastage of water. So that the temprature as well as humidity and light are measured by means of sensors and depend up on the outcome further processing can be performed.

B.RAVALI (22RH1A0408)
D.LAVANYA (22RH1A0418)
N.HEMA VARSHINI (22RH1A0446)
S.PRATHIMA (22RH1A0456)

ANTI THEFT SECURITY SYSTEM AND HELMET REMAINDER OVER GSM AND ALCOHOL DETECTION

The increasing number of road accidents and vehicle thefts has necessitated the development of advanced safety systems for motorcycles. This project presents an integrated solution that combines an anti-theft security system, helmet reminder, and alcohol detection, all connected via GSM technology. The anti-theft security system is designed to prevent unauthorized access to the motorcycle. It incorporates a GSM-based alert mechanism that notifies the owner via SMS in case of any suspicious activity or theft attempt. This real-time communication ensures quick response and enhances vehicle security. The helmet reminder system addresses the critical safety issue of helmet usage among riders. The system ensures that the motorcycle engine starts only when the rider wears the helmet, which is detected by a sensor integrated into the helmet. This feature significantly reduces the risk of head injuries in case of accidents. Additionally, the alcohol detection system plays a vital role in promoting road safety. It prevents the motorcycle from starting if the rider's breath alcohol level exceeds the legal limit. The system uses a breathalyzer sensor that detects alcohol concentration and sends an alert to the rider's mobile phone through GSM if the alcohol level is above the threshold.

CH.NAVYA (22RH1A0413)
D.DIVYA (22RH1A0419)
D.SREEJA (22RH1A0421)
J.PRIYA DARSHINI (22RH1A0435)

DOMESTIC POWER GENERATION USING RENEWABLE RESOURCES(WATER)

Hydropower is a reliable, clean, and efficient alternative to conventional fossil fuels and other energy resources. With the growing demand for sustainable and renewable energy resources, harnessing the kinetic energy or flowing or falling water presents a viable alternative to traditional power generation systems. The study evaluates various micro-hydropower technologies, including Peltron wheels, Kaplan turbines, and Archimedes screws, examining their efficiency, cost-effectiveness, and ease of installation. Our research highlights the benefits of micro-hydropower, such as its low environmental impact, reliability, and capacity for continuous power generation. This also addresses challenges associated with implementing these systems, such as regulatory hurdles, water rights issues, and the initial capital investment required. Case studies of successful installations in diverse geographical regions provide practical insights and demonstrate the adaptability of micro-hydropower solutions. Ultimately, this study aims to promote the adoption of water-based domestic power generation by providing a comprehensive analysis of its feasibility, technological advancements, and potential to contribute significantly to sustainability.

CHETHI PAVALIKA (22RH1A0412)
DEVASOTH DURGA (22RH1A0420)
GANDLA PERSIS (22RH1A0426)
NANNEBOINA RAVALI (22RH1A0448)

TREE CLIMBING DEVICE

The "Tree Climbing Device" is an innovative robotic system designed for efficient and safe tree climbing, leveraging both robotics and IoT technologies. This device aims to assist in tasks such as harvesting, inspection, or maintenance of tall trees, reducing human risk and effort. The core of the system is powered by an Arduino Nano microcontroller, which serves as the brain of the device, controlling various components such as DC motors, motor drivers, and climbers to enable vertical movement along the tree trunk. The device features multiple DC motors that power the climbers, allowing the system to ascend and descend the tree. These motors are controlled by motor drivers, which regulate the speed and direction of movement. One of the standout features of the tree climbing device is its wireless control via Bluetooth using the HC-05 module. The Tree Climbing Device is designed to be robust, portable, and adaptable to different tree sizes and environments. It can be applied in agriculture, forestry, and utility maintenance, offering a practical solution for tasks that require vertical mobility. By incorporating robotics and IoT, this device improves efficiency, reduces manual labour, and enhances safety in tree-related operations.

KOTHA HARSHITHA
21RH1A04C7
IV ECE B

EVENTS-PHOTOGRAPHS

ORIENTATION DAY – 2K23

AWARENESS PROGRAMME ON HIGHER EDUCATION-ABROAD

FUTURE SASTRA-2K23

HACKATHON

INTERNATIONAL EDUCATION CENTER &
GOBAL EDUCATION FAIR

CAMBRIDGE CERTIFICATIONS

ROTARACT CLUB

ALUMNI TALK

Placement Experience: from 3-2 semesters, students are eligible for campus placements. A number of organizations, including TCS, Infosys, Wipro, Accenture, and Capgemini, visit our college each year and choose a large number of students; placement rates at Mrecw are 100%.

A SREEJA
19RH1A0401
B.Tech — 2023 Passed out

These years at MRECW are the best years concerning learning, experience and gaining exposure to fields relevant to my discipline, all due to faculty members. At last, thanks to the college and Training & Placement Department for their continuous efforts in getting me placed in top IT Company. This endeavor will lead our college to incredible heights.

KONDA NEHA
20RH5A0409
B.Tech -2023 Passed Out

Getting involved in NSS activities was a life-changing experience. It broadened my horizons and made me realize the importance of giving back. I learned that technology could be a powerful tool for social change.

P VINISHA
19RH1A04J0
B.Tech -2023 Passed Out

TECHNITRONIX

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nirf NATIONAL INSTITUTIONAL RANKING FRAMEWORK Indian Ranking-2020

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