SHREE VENKATESHWARA HI-TECH ENGINEERING COLLEGE

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

ECEBYTE - 25

TECHNICAL MAGAZINE

I am delighted to introduce the ECE BYTE, our technical magazine. This publication serves as a platform to showcase the hidden writing talents of students, helping them refine their skills and contribute to their overall personality development. I extend my heartfelt congratulations to all the contributors for their dedication and effort in bringing this magazine to life.

Thiru.K.C.Karupanan MLA

Secretary/SVHEC

SVHEC has made impressive strides, accomplishing notable milestones in a short period. It brings me great joy to see the students and faculty of the ECE department introducing ECE BYTE, the department's technical magazine. This publication serves as a platform to highlight the literary and technical talents of both students and faculty while nurturing leadership skills and intellectual growth.

Rtn.P.Venkatachalam,MPHF

Chairman/SVHEC

I extend my heartfelt congratulations to the Department of ECE and the ECE BYTE team for successfully publishing the first issue of this prestigious technical magazine. I am confident that this magazine will serve as a valuable platform for students and faculty to enhance their technical knowledge and showcase their literary talents. A special appreciation goes to the editorial board for their dedication and hard work in bringing this publication to life**.**

Dr.P.Thangavel ME MBA PhD

Principal/SVHEC

Dr.R.S.Kamalakannan

Head of the Department

Electronics and Communication Engineering

I appreciate to the faculty members and students for the magazine committee of ECEBYTE22 to successful completion of this magazine

As the Head of the Electronics and Communication Engineering department, it's my pleasure to see our students showcase their talents and achievements in this magazine. This publication highlights the innovative projects, research work, and extracurricular activities of our students, demonstrating their dedication and passion for the field.

Our department is committed to providing a nurturing environment that fosters academic excellence, creativity, and innovation. We strive to equip our students with the knowledge, skills, and values necessary to succeed in their careers.

I commend the editorial team for their hard work and initiative in bringing out this ECEBYTE magazine. It's a testament to the department's spirit and enthusiasm. I hope this publication inspires and motivates our students to pursue their goals with dedication and perseverance.

I wish the magazine all the best and look forward to seeing future editions. I believe it will become a valuable platform for our students to express themselves, share their ideas, and showcase their talents.

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

ABOUT ELECTRONICS AND COMMUNICATION DEPARTMENT

The Electronics and Communication Engineering Department was established in the year 2008. The department offers Undergraduate (BE-ECE), & Post Graduate (ME-Applied Electronics) programmes, that provide students with the knowledge and Tools they need To succeed in the ECE. After the completion of the course, lots of opportunities are there in various fields of Telecommunication Networks and Embedded System, Signal & Image Processing, VLSI Design etc. To expose the students To the world of technology and produce graduates fully equipped To achieve the highest personal and professional standards for Industry application and in higher studies. The Department has built an excellent reputation for its graduates in terms of placements

VISION

► Produce competent Electronics and Communication Engineering professionals with scientific temper, values, ethics, team spirit and capabilities To face new challenges

MISSION

► Provide conducing learning environment with state-of-the-art infrastructure facilities, laboratories and teaching learning systems.

► Produce skilled Electronics and/or Communication Engineers with skills Towards employability, leadership, communication skills with social responsibilities and ethical values

► Inculcate Professional skills to function as proficient engineers and designers capable of building sustainable equipment/systems and infrastructure for the society.

► Promote research and development activities in the rapidly changing technologies related To Electronics and Communication Engineering and allied domains.

Program Educational Objectives (PEOs)

1. **Successful career** - To enable graduates have a successful career in academia or industries associated with Electronics and Communication Engineering, or as entrepreneurs
2. **Foundational concepts** - To provide students with strong foundational concepts and also advanced techniques and Tools in order To enable them To build solutions or systems of varying complexity.
3. **Analyze Methodology** - To prepare students To critically analyze existing literature inan area of specialization and ethically develop innovative and research oriented methodologies To solve the problems identified.

Program Outcomes (POs)

1. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization To the solution of complex engineering problems.
2. **Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information To provide valid conclusions.
5. **Modern Tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT Tools including prediction and modeling To complex engineering activities with an understanding of the limitations.
6. **The engineer and society**: Apply reasoning informed by the contextual knowledge To assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant To the professional engineering practice.
7. **Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit To professional ethics and responsibilities and norms of the engineering practice.

9. **Individual and team work**: Function effectively as an individual, and as amember or leader in diverse teams, and in multidisciplinary settings.

10. **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able To comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

11. **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these To one's own work, as a member and leader in a team, To manage projects and in multidisciplinary environments.

12. **Life-long learning**: Recognize the need for, and have the preparation and ability To engage in independent and life-long learning in the broadest context of technological change.

Program Specific Program Outcomes(PSOs)

PSO1: Core skills-Apply knowledge and skills to analyze, Design and develop analog and digital circuits for a electronics applications.

PSO2:Problem solving skills –Ability to Design and implement the approaches to solve challenges in the field of communication, signal processing, VLSI and Internet of Things (IoT).

PSO3: Professional career - Adapt to emerging Information and communication technologies (ICT)and develop innovative solutions for existing and newer problems

Editor-in-Chief

Dr.R.S.Kamalakannan
HOD/ECE

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Gayathri N- IV ECE
Gunasekaran P- III ECE
Karthika B –III ECE
Firozkhan A – II ECE
Kalaiventhan T–II ECE

Smart EcoBin For Safer Environment

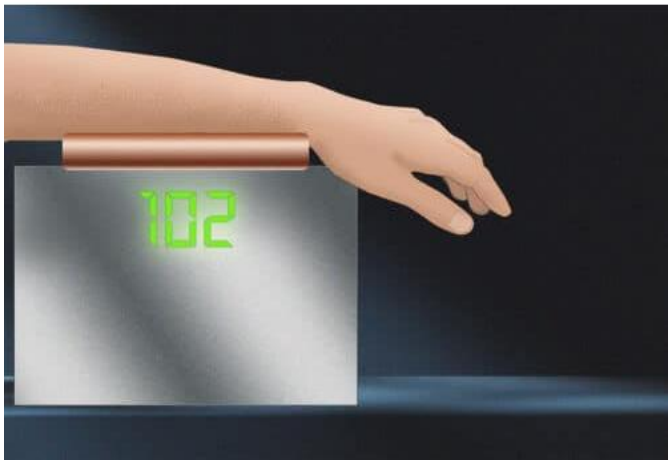
An ultrasonic sensor measures the waste level inside the EcoBin, indicating whether the bin is empty, partially filled, or full. This enables timely collection and prevents overflow. A DHT11 sensor records temperature and humidity, ensuring that conditions inside and around the bin are monitored for improved hygiene and maintenance. An MQ135 air quality sensor detects harmful gases and evaluates overall air quality both within the bin and in its surrounding area.

HARISH R

III ECE

NEEDLE-FREE GLUCOSE CHECK

Frequent glucose checks remain a major challenge for people with diabetes. Many still depend on finger-prick tests, which require drawing blood several times a day. Others use wearable monitors with a small sensor placed under the skin, but these devices can irritate the skin and must be replaced every 10 to 15 days. The need for a painless, comfortable, and reliable glucose-monitoring method has pushed researchers to explore noninvasive technologies.



KOSHIGAN S

II ECE

BIODEGRADABLE BATTERY FOR WEARABLES

Battery waste from wearable devices and medical implants is a growing problem, creating an urgent need for sustainable alternatives. Researchers at McGill University's Trottier Institute for Sustainability in Engineering and Design have developed a new eco-friendly battery that could power these devices while safely decomposing in the environment. The battery is made from citric acids, gelatin, and biodegradable metals, replacing heavy-metal electrodes commonly used in conventional batteries. Magnesium and molybdenum, often used in biodegradable battery concepts, degrade more easily than heavy metals but typically show lower performance.

MAYILSAMY P

III ECE

DIGITAL TWIN TECHNOLOGY: INSIGHTS FOR BEGINNERS

With the help of a digital twin, you can do many useful things: monitor live data, collect data from device sensors, run simulations, test different settings or adjustments, and see what might happen to the real machine before experimenting on the actual one. It is also used for predictive analytics, such as estimating when something might fail or when maintenance might be required. This way, you gain insights early and save both time and cost.

PANNEERSELVAM K

II ECE

IOT-BASED SOIL MOISTURE MAPPING

In an era where sustainable farming and efficient resource management are paramount, the Soil Moisture Mapping project emerges as an innovative, low-cost solution for monitoring environmental conditions across agricultural lands. Powered by the IndusBoard Coin—a compact, WiFi-enabled microcontroller—this project enables real-time tracking of soil moisture, light intensity, and temperature across a divided land area (up to 30 sections).

PRASATH S

III ECE

POWERFUL AI COMPUTING AT YOUR DESK

As AI models grow larger, the memory and processing power of standard PCs, workstations, and laptops are no longer enough. Developers often have to move their work to the cloud or dedicated data centers, which can slow development, increase costs, and create privacy concerns. DGX Spark from NVIDIA addresses this by bringing high-performance AI computing directly to the desktop. The system delivers a petaflop of AI performance and 128GB of unified memory in a compact form. It enables developers to run inference on models with up to 200 billion parameters and fine-tune models of up to 70 billion parameters locally.

SURYAPRAKASH I

II ECE

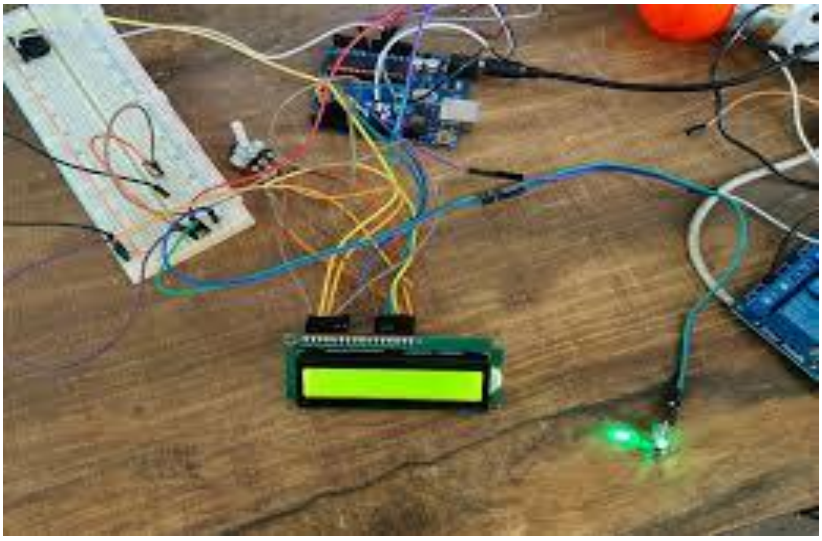
STUDENTS PROJECTS

TITLE: IOT BASED MEDICAL BOX FOR HEALTH MONITORING AND EMERGENCY ALERTS

The rapid expansion of the Internet of Things (IoT) has significantly transformed the healthcare industry, enabling innovative solutions for remote patient care and medication management. This project presents the design and implementation of an IoT-based smart medical box aimed at improving medication adherence, monitoring patient health, and providing timely emergency alerts, particularly for the elderly or those with chronic conditions

The proposed system integrates a smart medicine box with various health sensors (e.g., heart rate, temperature, blood pressure, oxygen saturation) and wireless connectivity (Wi-Fi, GSM)

By leveraging IoT technology, the system aims to provide a reliable, user-friendly, and cost-effective solution that enhances patient safety, improves treatment efficiency, and offers peace of mind to both patients and their caregivers**.**



NAVEEN V

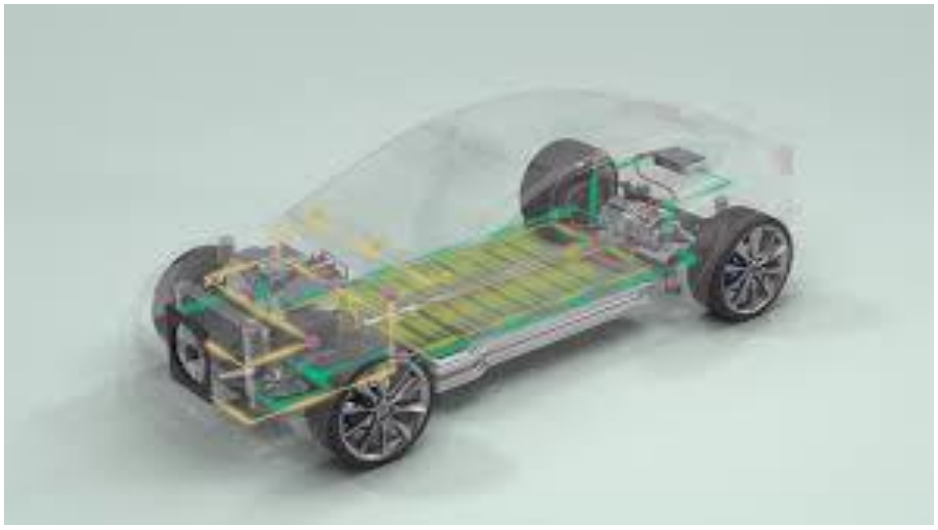
SATHYA K

SUBASH P

TITLE : AI-DRIVAN ADAPTIVE BATTERY MANAGEMENT SYSTEM

The widespread adoption of battery-powered systems (such as electric vehicles and renewable energy storage) is often hampered by limitations in battery performance, safety, and lifespan, which traditional, rule-based Battery Management Systems (BMS) struggle to fully address. This project introduces a novel AI-driven adaptive BMS model designed to overcome these challenges. The system utilizes machine learning (ML) and deep learning (DL) algorithms, such as Convolutional Neural Networks (CNNs) and Long Short-Term Memory (LSTM) networks, to perform real-time, model-free prediction of key battery states: State of Charge (SoC), State of Health (SoH), and Remaining Useful Life (RUL).

The core innovation lies in the system's ability to adapt dynamically to varying operational conditions, usage patterns, and battery degradation over time, without requiring extensive manual calibration or predefined physical models. By processing data from advanced sensors (voltage, current, temperature), the AI model can accurately detect anomalies, predict potential faults before they escalate, and implement proactive thermal and energy management strategies.



DHILIP N

PRADEEPKUMAR K

SARAVANAN P

TITLE : SMART FARMING CONNECTIVITY USING VISIBLE LIGHT COMMUNICATION IN GREEN HOUSE ENVIRONMENTS

This project proposes the design and evaluation of a smart farming system within a controlled greenhouse environment that leverages Visible Light Communication (VLC) for robust and energy-efficient data transmission. The primary goal is to provide a reliable, low-cost alternative to traditional Radio Frequency (RF) communication, which can be susceptible to interference and high energy costs in agricultural settings

The system integrates various Internet of Things (IoT) sensors (temperature, humidity, soil moisture, light intensity) to monitor critical environmental parameters in real-time. The innovation lies in using the existing LED grow lights within the greenhouse for data transmission via intensity modulation, thereby serving a dual purpose: illumination and communication. The data collected is sent to a central monitoring system (PC or mobile application) for analysis and automated control of actuators like fans, irrigation pumps, and shades. Performance evaluation focuses on the Bit Error Rate (BER) and received power under varying atmospheric conditions, particularly humidity, demonstrating that effective communication is feasible within relevant operational distances (e.g., 40 to 100 cm with humidity less than 100%).

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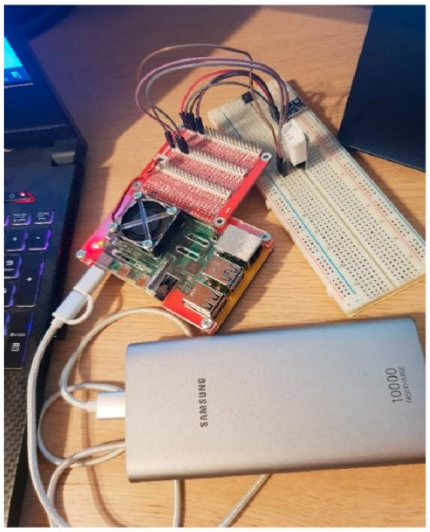


(d)

DHARUNSUNDHARESAN K

INDHUJA M

JOHN PETER R

TITLE: INTELLIGENT WASTE MANAGEMENT SYSTEM FOR SMART CITIES USING IOT

This project presents an IoT-based Smart Waste Management System designed to tackle overflowing dustbins, unhygienic conditions, and inefficient collection in smart cities by integrating low-cost sensors, microcontrollers, and cloud computing. The system monitors garbage bin fill levels using **ultrasonic sensors** and transmits this data, along with unique bin IDs and GPS coordinates, wirelessly to a central server. Authorities access this data via a **web/mobile interface**, allowing them to dispatch collection trucks only when bins are full, optimizing routes and saving fuel. The system aims to improve public health, resource efficiency, and overall urban cleanliness through real-time monitoring and data-driven decision-making, moving from fixed schedules to dynamic, on-demand waste collection.

This project presents an IoT-based Smart Waste Management System designed to tackle overflowing dustbins, unhygienic conditions, and inefficient collection in smart cities by integrating low-cost sensors, microcontrollers, and cloud computing. The system monitors garbage bin fill levels using ultrasonic sensors and transmits this data, along with unique bin IDs and GPS coordinates, wirelessly to a central server. Authorities access this data via a web/mobile interface, allowing them to dispatch collection trucks only when bins are full, optimizing routes and saving fuel. The system aims to improve public health, resource efficiency, and overall urban cleanliness through real-time monitoring and data-driven decision-making, moving from fixed schedules to dynamic, on-demand waste collection.

ARAVINDH J

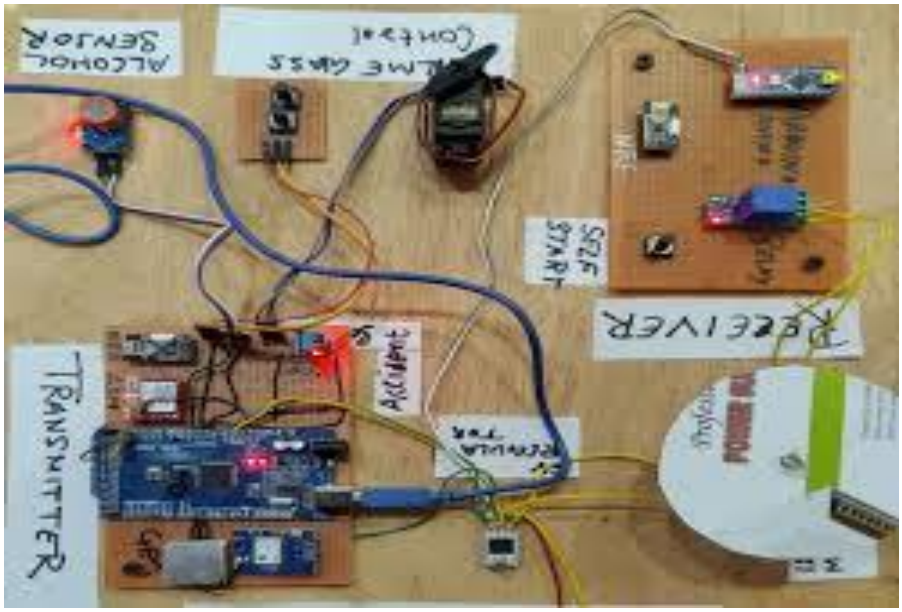
PRABHAKARARAAJ J B

SAKTHIVEL K

TITLE: DESIGN AND IMPLEMENTATION OF IOT BASED SMART HELMET FOR ROAD ACCIDENT AVOIDED AND USING ZIGBEE

An IoT Smart Helmet project uses sensors (vibration, alcohol, IR) and microcontrollers (Arduino/NodeMCU) with GPS/GSM/Zigbee/Wi-Fi to enhance rider safety by detecting falls (sending location alerts via GPS/GSM), checking for helmet wear/alcohol (locking ignition if failed), and adding night visibility (LEDs), all monitored via cloud platforms like Blynk/Ubidots, aiming to prevent accidents and speed emergency response. The core model involves helmet sensors, a microcontroller, communication modules (GSM/Zigbee/WiFi), and a linked bike system, all communicating data to an app or cloud for analysis and action.

Road accidents remain a critical issue, often due to non-helmet use, drunk driving, or delayed emergency response. This project presents an Internet of Things (IoT) based smart helmet system designed to mitigate these risks. The helmet integrates vibration/accelerometer sensors for crash detection, an MQ-3 alcohol sensor, and an IR sensor for helmet-wearing detection, linked to an Arduino/NodeMCU microcontroller. Upon detecting a crash or alcohol/no-helmet, the system triggers emergency protocols: GPS provides location, GSM/Zigbee/WiFi sends alerts with GPS data to emergency contacts/cloud, and a linked bike system can disable ignition if safety criteria aren't met. Features include night visibility LEDs and cloud monitoring for rider data, creating a comprehensive safety solution.



KAVINKUMAR S

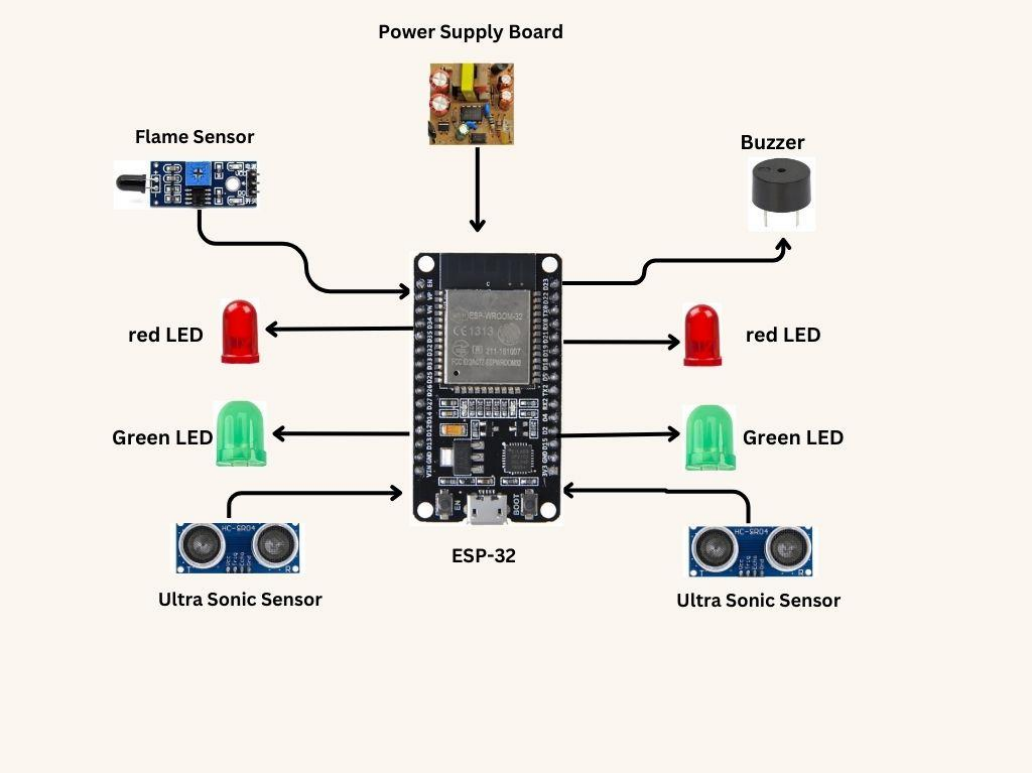
NIRENTHIRAN N

PREMA B

TITLE : TACTICAL RESCUE ANALYSIS SYSTEM USING IOT

A Tactical Rescue Analysis System using IoT integrates sensors (gas, temp, pressure, motion, GPS, cameras) on microcontrollers (Arduino, NodeMCU) to gather real-time environmental and victim data, transmitting it via Wi-Fi/GSM to cloud platforms (ThingSpeak, custom servers) for immediate analysis, visualization (graphs, mobile apps), and action planning, enabling faster, data-driven responses in disaster scenarios like fires, collapses, or accidents by locating victims and assessing hazards

A rescue analysis system is an IoT based monitoring system which collects data via sensors and stores the readings in an online IoT cloud database. These sensors are mounted upon a microcontroller called Arduino UNO which serves as a common platform for all the sensors to work. This rescue analysis system constitutes of various sensors namely DHT11 temperature sensors, BMP180 pressure and altitude sensor, MQ2 gas sensors, ESP8266 Wi-Fi module and a buzzer for the gas sensor. The data collected by these sensors record the subsequent environmental conditions and transmit the data from the Arduino UNO to the ThingSpeak IoT cloud. ThingSpeak is an IoT analytics platform that helps the rescue team aggregate, visualize and analyze the live data streams in the cloud. The data collected by these sensors will be sent to ThingSpeak and those readings will be reported back in the form of graphs. The recorded data assists the rescue team to eventually come up with an action plan.



KALAIVANI N

NAVAVENTHAN A

SANDHIYA S

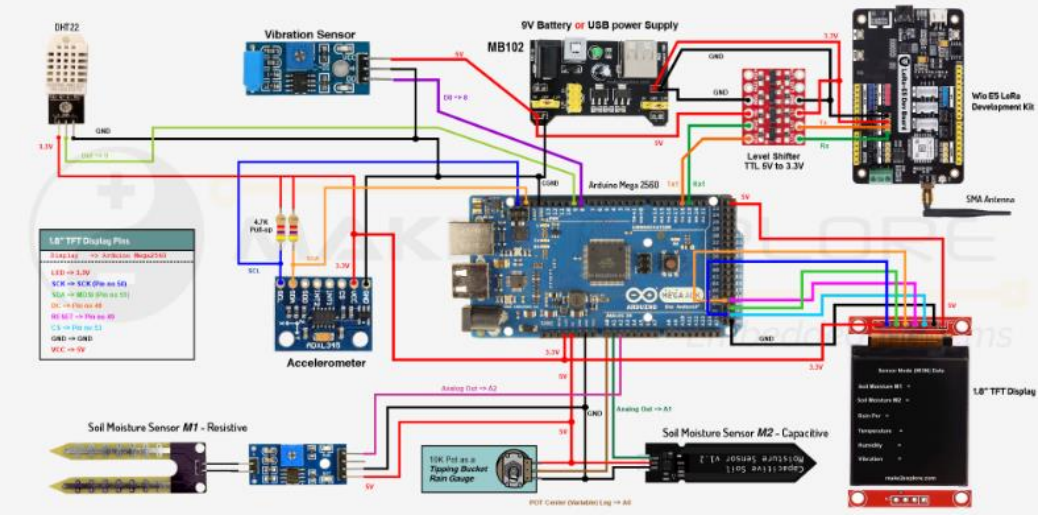
TITLE: WIRELESS LANDSLIDE HAZARD PREDICTION USING LORA AND AI-DRIVEN SENSOR DATA ANALYSIS IN REMOTE AREAS

This project presents a system for wireless landslide hazard prediction in remote areas, integrating LoRa (Long-Range) communication and AI-driven sensor data analysis. The primary goal is to provide a reliable, low-cost, and energy-efficient early warning system in areas prone to geohazards, where traditional monitoring methods are often impractical due to limited infrastructure and power access.

The system uses a wireless sensor network (WSN) to collect real-time data on critical environmental and geotechnical parameters associated with slope instability

Sensor nodes, often built around microcontrollers like the Arduino or ESP32, are deployed across the monitored slope. LoRa technology is leveraged for its long-range coverage and low power consumption, enabling data transmission over several kilometers to a central gateway, even in harsh outdoor environments.

At the base station or a cloud server, the collected data undergoes AI-driven analysis using machine learning (ML) models such as Random Forest (RF), Support Vector Machines (SVM), or neural networks. These models are trained on historical data to identify subtle patterns and correlations that precede a landslide event, moving beyond simple threshold-based alarms to provide more precise and timely predictions.



RAJESH R

VIGNESHKUMAR S

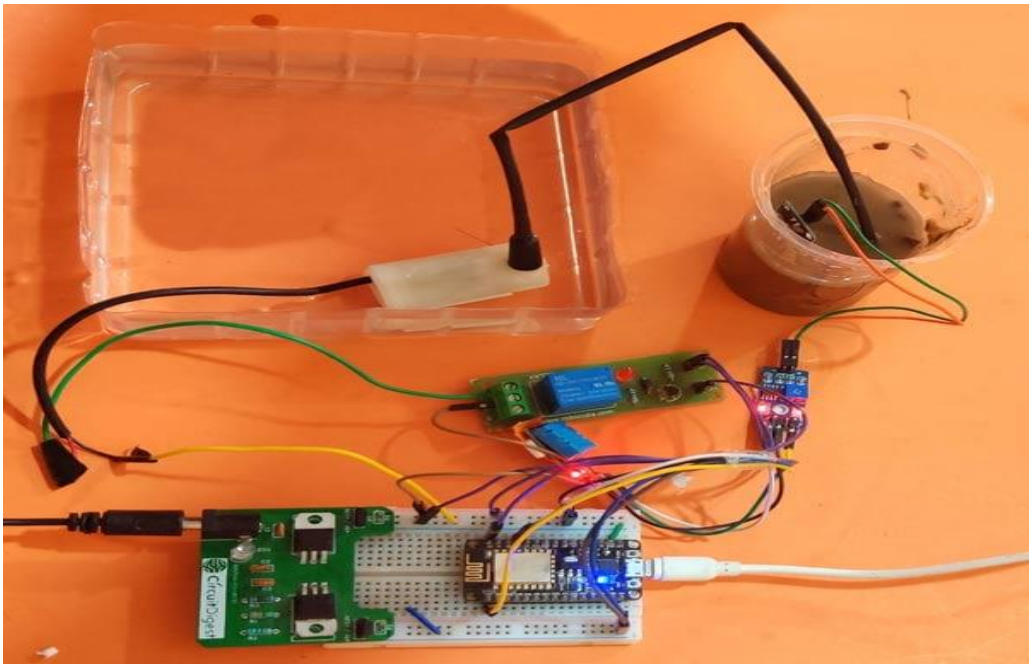
DINESHKUMAR S

TITLE : IOT ENABLED MACHINE LEARNING MODELS FOR EFFICIENT MONITORING OF SMART AGRICULTURE

This project introduces an Internet of Things (IoT)-enabled smart agriculture system that leverages Machine Learning (ML) models for efficient and real-time monitoring and management of agricultural fields. The system addresses challenges in traditional farming, such as resource scarcity and unpredictable weather patterns, to maximize crop yield, optimize resource utilization (water, fertilizers), and promote sustainable farming practices.

The system integrates a network of IoT sensors deployed across the field to collect real-time data on critical environmental and soil parameters, including soil moisture, temperature, humidity, and nutrient (N, P, K) levels. This data is transmitted via wireless networks to a cloud-based platform for storage and processing.

Machine learning algorithms, such as Random Forest and clustering models, are applied to the collected data to provide actionable insights and enable predictive analytics



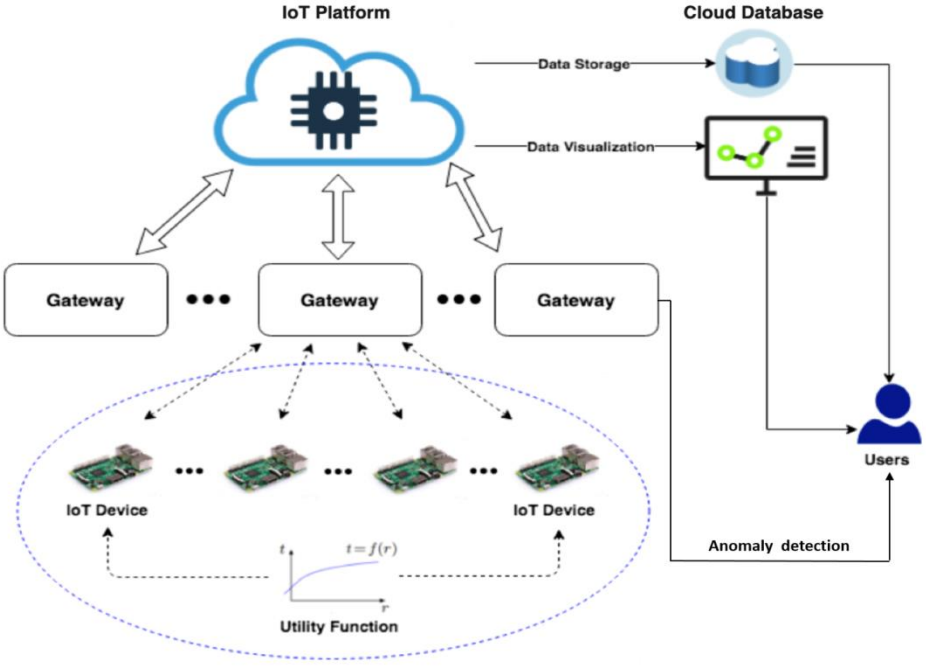
KARTHIKEYAN K

SNEGA M

TITLE: EMBEDDED AI FOR REAL TIME ANOMALY DETECTION IN ZIGBEE

This project presents an Embedded AI-based framework for real-time anomaly detection in Zigbee-based Internet of Things (IoT) networks, focusing on enhancing security, reliability, and operational efficiency within resource-constrained environments. Traditional cloud-based detection systems often introduce latency and privacy concerns, while conventional rule-based security measures struggle to identify novel or zero-day attacks. This solution leverages the principles of Edge AI to deploy lightweight machine learning models directly onto embedded devices or local gateways, enabling immediate, on-device data processing and threat mitigation with minimal latency.

The project aims to demonstrate that embedded AI can offer a scalable, efficient, and low-latency solution for securing and maintaining Zigbee networks. The expected result is a robust system capable of identifying both known and previously unseen anomalies with high accuracy, thus enhancing the overall resilience of IoT ecosystems in industrial or smart home environments.



DISHA V

VIJAYAPRABHAKARAN K

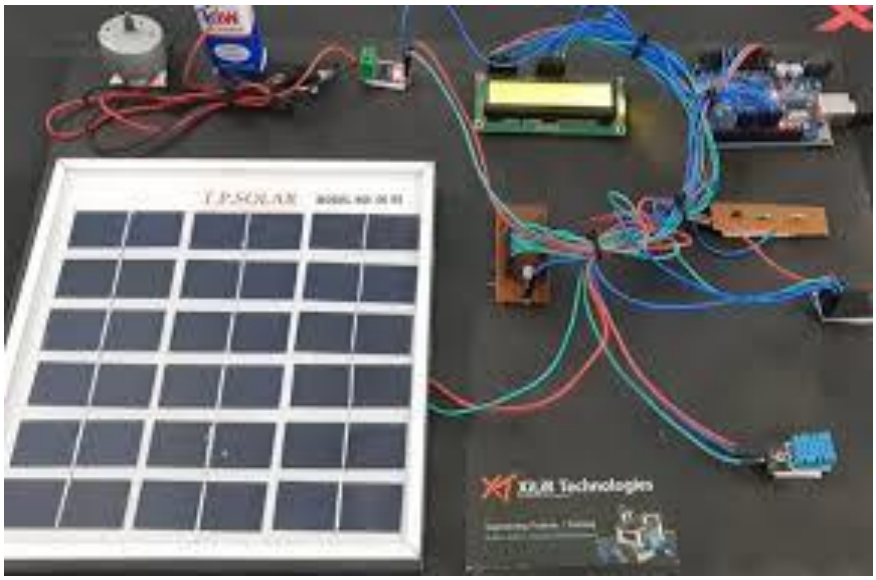
MAHENDRAN V

TITLE: SMART GRID SYSTEM USING SOLAR PANEL WITH IOT MONITORING

This project proposes an IoT-enabled smart grid architecture for the remote monitoring and control of renewable energy sources, specifically solar power. The core objective is to enhance energy efficiency, improve system reliability, and reduce reliance on conventional energy sources by leveraging real-time data monitoring and control capabilities.

The system uses sensors to collect data on crucial parameters like voltage, current, temperature, and energy generation from the solar panels. This data is transmitted via a Wi-Fi module (e.g., NodeMCU ESP8266 or ESP32) to a cloud-based platform (e.g., Blynk or ThingSpeak). Users can then access and visualize this data on their smartphones or computers through a dedicated application or web interface, enabling remote monitoring and control of connected loads.

The solar panels generate power, which is managed by the charge controller and stored in the battery. Sensors continuously monitor the system's performance and environmental conditions. This data is transmitted to the cloud via the Wi-Fi module. The user can view the data and control the loads remotely through the mobile app. The system can also automatically react to certain conditions, such as high temperatures or power faults, for enhanced reliability.



NITHYA S

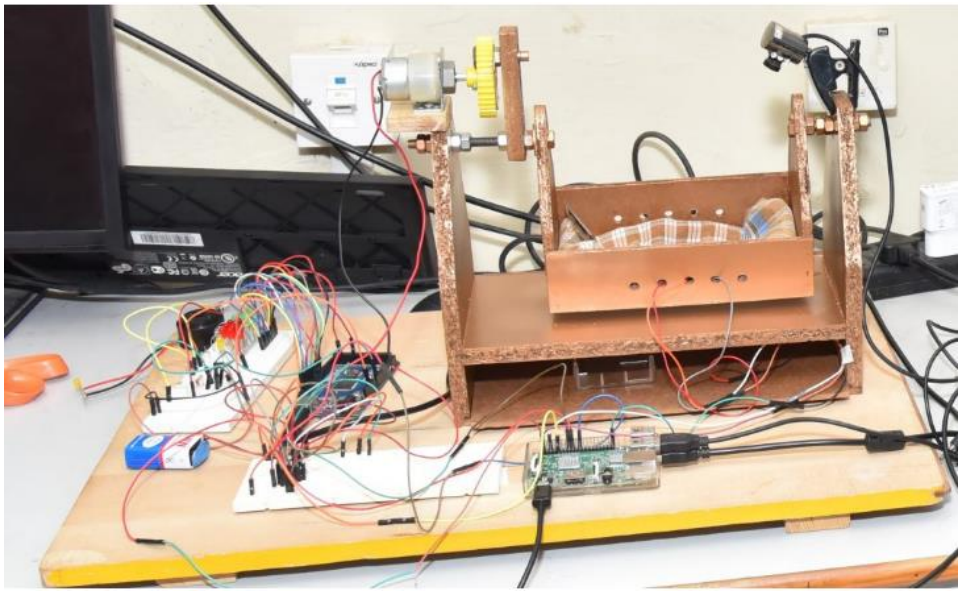
VIGNESH T

VIJAYASRI S

TITLE : SMART BABY MONITORING CARDEL SYSTEM USING INTERNET OF THINGS

A Smart Baby Monitoring Cradle System uses IoT sensors (temp, moisture, sound, motion, camera) and a microcontroller (like Arduino/ESP32) to track infant vitals & environment, sending real-time alerts (SMS, app) to parents' phones for issues like wet diapers, high temp, or crying, often featuring automated soothing (rocking, lullabies) via actuators and cloud integration for remote monitoring via mobile apps, ensuring enhanced safety, reduced parental burden, and proactive care

Smart Cradle System using IOT helps the parent to monitor their child even if they are distant from the home and detect the activity of the baby from any distinct corner of the world. It is an Innovative, smart and protective cradle system to nurture an infant in an efficient way. This system consists of all the care and protection details of the baby in the cradle. The design of smartness and innovation comes with the use of technologies which include Internet of Things (IOT) modules like Raspberry Pi, Humidity and Temperature sensing, cry detecting mechanism, live video surveillance, Cloud Computing and android application. All the conditions which is been taken from the modules will be stored in cloud (thing Speak) and analysed at regular intervals. A healthy algorithm is applied to these data sets to get information about the body conditions which is useful as any regular symptoms of a disease can be identified easily



ARTHI S

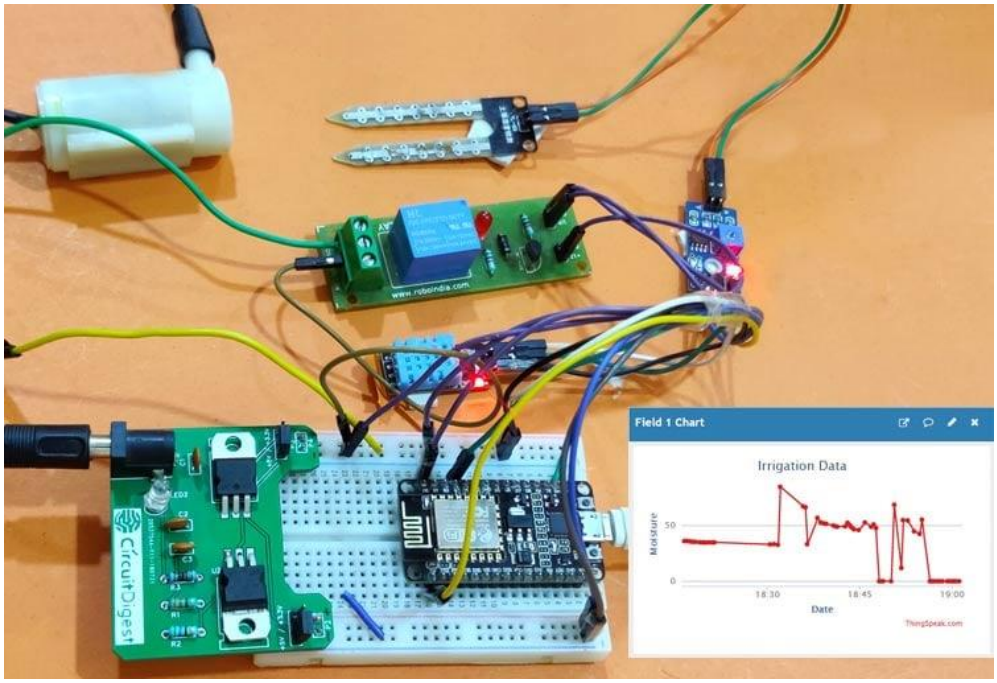
KIRUBAKARAN S

SHANMUGAPRIYAN R

TITLE : SMART IOT ENABLED ADAPTIVE IRRIGATION SYSTEM WITH ARIMA BASED SOIL MOISTURE FORECASTING

This project presents a smart, IoT-enabled adaptive irrigation system that uses ARIMA (AutoRegressive Integrated Moving Average) for precise soil moisture forecasting, optimizing water usage in agriculture. The system comprises a sensor network (soil moisture, temperature, humidity) connected to a microcontroller (e.g., ESP32) that transmits data to a cloud platform, like Firebase, for storage and processing. The core innovation lies in the application of time-series ARIMA modeling to predict soil moisture trends, allowing for proactive rather than reactive watering. Based on these forecasts and predefined crop/soil parameters, the system automatically activates irrigation actuators, delivering water only when and where needed, ensuring efficient resource management, higher crop yields, and reduced manual intervention.

This project integrates IoT sensors (moisture, temp, humidity) with a microcontroller (ESP32/Arduino) to gather real-time field data, sending it to the cloud (Firebase) for analysis, where an **ARIMA model** forecasts future soil moisture levels, enabling **automated, adaptive irrigation** via actuators (pumps, valves), reducing water waste, saving labor, and ensuring optimal crop hydration for sustainable agriculture, all controlled through a mobile/web app.



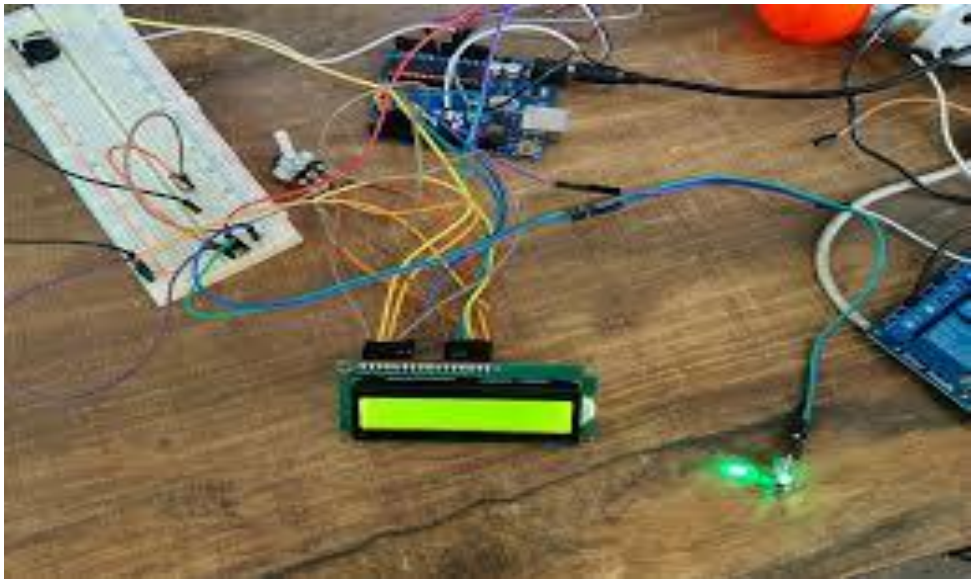
ANBAZHAGAN A

JANANI M

PREETHIKA B

TITLE: AI & IOT BASED POWERED LEAF HEALTH MONITORING SYSTEM

This project introduces a comprehensive system for automated plant health monitoring by integrating Artificial Intelligence (AI) and the Internet of Things (IoT). Traditional manual inspection methods are time-consuming and often result in delayed disease detection and significant crop losses. The proposed solution leverages sensor networks and computer vision to monitor key environmental parameters and leaf imagery continuously. An IoT device equipped with an integrated camera periodically captures leaf images, while environmental sensors (e.g., for soil moisture, temperature, and humidity) collect real-time data. This data is transmitted to a cloud-based platform or local server via wireless communication (Wi-Fi/MQTT protocol). The AI component, typically a deep learning model like a Convolutional Neural Network (CNN) trained on a large dataset of healthy and diseased leaves, analyzes the images to classify health conditions and identify diseases. The system provides a user-friendly interface, such as a mobile application or web dashboard, to display the plant's health status, historical data, and send immediate alerts or recommendations for intervention to the farmer. This approach enhances efficiency, reduces the use of pesticides, and contributes to sustainable and climate-resilient agriculture.



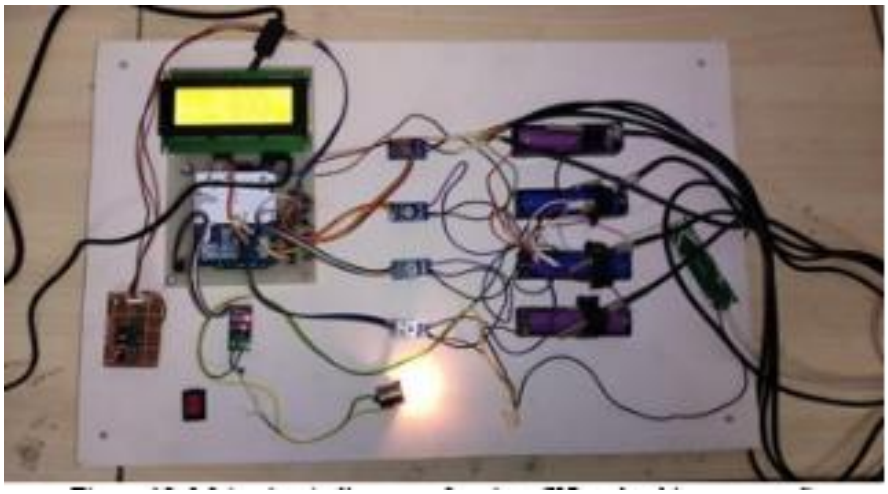
GAYATHRI N

KRISHNAVENI V

MOHANRAJ V

TITLE : ELECTRIC VEHICLE BATTERY MANAGEMENT SYSTEM BY USING DEEP LEARNING MODEL CLOUD BASED APPROACH

The rapid adoption of electric vehicles (EVs) necessitates highly efficient and reliable battery management systems (BMS). Traditional, onboard BMS often face limitations in computational power and memory, which hinders advanced analysis and precise state estimation (e.g., State-of-Charge (SoC) and State-of-Health (SoH)). This project proposes a novel cloud-based EV BMS that integrates Internet of Things (IoT) technology and deep learning models to overcome these limitations. The system uses sensors to collect critical battery parameters such as voltage, current, and temperature in real-time. This data is transmitted via an IoT gateway to a scalable cloud platform for storage and comprehensive analysis. The core of the system is a suite of deep learning algorithms, including Long Short-Term Memory (LSTM) and Convolutional Neural Networks (CNNs), which learn complex patterns from historical and real-time data to provide highly accurate predictions of battery health and performance. The cloud infrastructure enables continuous monitoring, early fault detection, predictive maintenance scheduling, and remote optimization of charging protocols, thereby extending battery life, ensuring safe operation, and reducing operational costs. A user-friendly web/mobile interface provides actionable insights and real-time alerts to both users and manufacturers. The proposed system enhances the overall efficiency and reliability of EV battery technology, supporting sustainable energy practices.



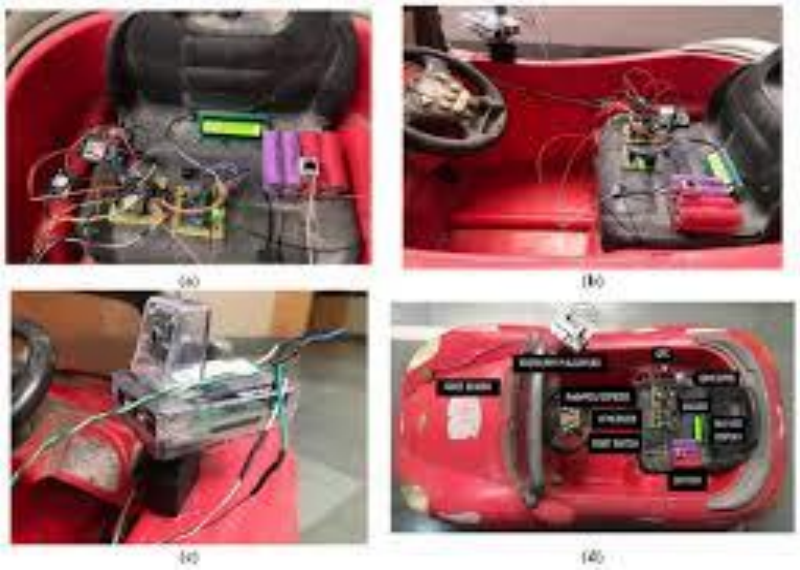
KEERTHI S

KHALID AHAMED M

MOUNIKA V

TITLE : AI-DRIVEN ELECTRICAL SAFETY EMERGENCY RESPONSE SYSTEM WITH GSM AND GPS

This project introduces a real-time vehicle accident alert system that seamlessly integrates GPS and GSM technologies. Its key features include immediate accident detection, precise GPS location tracking, and instant alert transmission to authorities and vehicle owners. By significantly reducing response times, this system aims to enhance road safety, save lives, and improve post-accident care. The project's primary objective is to develop an efficient and user-friendly solution for addressingthe critical issue of road safety. The system promises to reduce accident-related fatalities and injuries,improve emergency response coordination, and increase accountability for vehicle owners.



GOKULRAJ D
NAGAJAYARUBA K S
SUGANYA R

TITLE : AUTO ENCODER-BASED DETECTION OF INSULIN PUMP FAULTS IN TYPE 1 DIABETES TREATMENT

An Autoencoder-Based Fault Detection project for Insulin Pumps in Type 1 Diabetes uses deep learning to identify pump malfunctions (like blockages or sensor errors) by learning normal patterns from Continuous Glucose Monitor (CGM)/pump data, flagging deviations (high reconstruction error) as faults, boosting safety in Artificial Pancreas (AP) systems by distinguishing them from user errors (missed meals), and potentially using Variational Autoencoders (VAEs) for complex data, improving reliability for better glucose control.

This project aims to enhance Type 1 Diabetes (T1D) management by developing an AI system to automatically detect insulin pump faults, a critical safety concern in closed-loop therapies like Artificial Pancreas (AP) systems. Using an autoencoder (a type of neural network), the model learns normal operating patterns from CGM/pump data, then identifies deviations that signal issues like occlusions, pump failures, or sensor errors. This significantly improves system safety by providing timely alerts, differentiating pump failures from user errors (like missed boluses), and reducing risks like hypoglycemia or hyperglycemia.

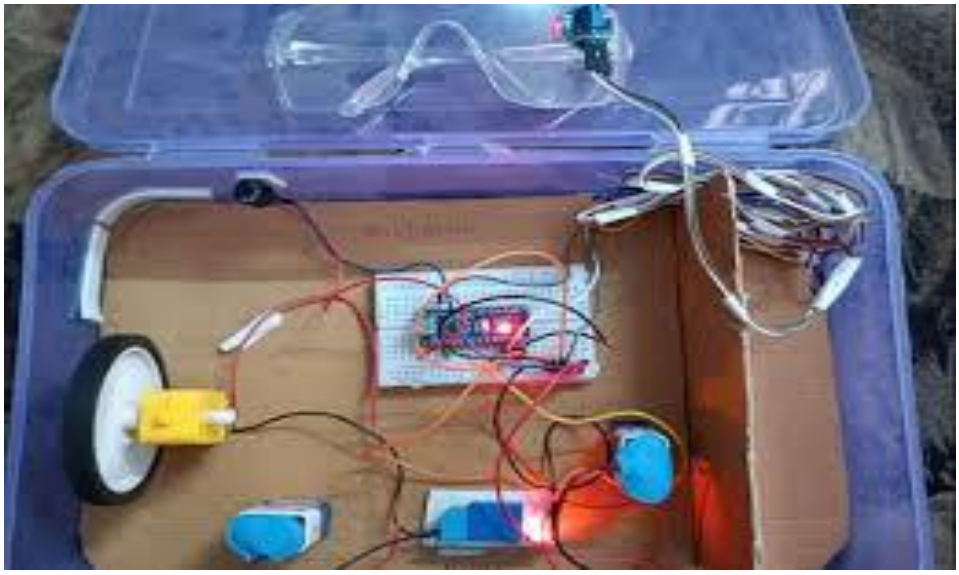
NAVEENA S

SHWATHI U V

SRIDHAR V

TITLE : EMBEDDED VISION SYSTEM FOR DROWSY DRIVING DETECTOR USING ESP32 CAM AND ARDUINO

This project presents an **Embedded Vision System for Drowsy Driving Detection** aimed at significantly enhancing road safety by proactively identifying and alerting drivers to signs of fatigue. Utilizing a low-cost, compact **ESP32-CAM** module for continuous facial monitoring, the system captures real-time video feed within the vehicle's cabin. This visual data is processed using computer vision and machine learning algorithms (specifically using Python libraries like OpenCV and Dlib) to analyze key indicators of drowsiness, including **Eye Closure Duration (ECD)** and **Yawning Frequency**. When these indicators surpass a predefined safety threshold, the system triggers an immediate, multi-modal alert mechanism managed by an **Arduino** microcontroller, typically involving an audible buzzer and/or visual warnings (e.g., an LCD message or an IoT notification). The system is designed to be a non-intrusive, real-time monitoring solution that minimizes false alarms and provides effective intervention to prevent accidents caused by driver fatigue.



JANA SARATHI S

SAKTHIVEL C

TAMILSELVAN P

TITLE : IOT ENABLED ANESTHESIA MONITORING AND CONTROL SYSTEM

This project presents an IoT-based anesthesia management system designed to enhance patient safety and surgical efficiency by integrating real-time vital sign monitoring with automated drug delivery. The system continuously collects crucial physiological data (heart rate, SpO2, blood pressure, temperature) using various sensors connected to a microcontroller, such as an Arduino or Raspberry Pi. This data is securely transmitted over the internet to a cloud platform, enabling anesthetists to remotely view patient status and receive alerts. An integrated control algorithm analyzes this data to dynamically adjust the anesthesia dosage via a smart infusion pump, minimizing risks of overdose/underdose and reducing manual dependency. The system incorporates features like automated control, data logging, and remote management for timely intervention, ultimately improving accuracy, reliability, and patient outcomes in critical medical environments.

JAYASRI M
SATHIYA A
SATHISH P

TITLE : MOUNTAIN CLIMBERS LOCATION AND HEALTH CONDITION DETECTION DEVICE USING MACHINE TO MACHINE COMMUNICATION

Although mountaineering is known for its exhilaration and thrill, there are risks involve d. Mountain climbers are always vulnerable to accidents, particularly in remote or high-altitude settings. Regrettably, search and rescue operations encounter formidable obstacles when incidents of this nature transpire. Timely action is hindered when accidents are not reported to rescue crews for hours or even days. The problem is made worse by the fact that rescue workers do not have access to exact information. They frequently have trouble determining the accident location and the health conditions of the individuals. This uncertainty increases the difficulty of rescue operations and lowers the chance of a successful outcome. Technological developments, however, present a possible remedy. Astute mountain climbers use cuttingedge equipment to increase safety and speed up rescue missions. Climbers can follow their position and health state remotely by using capabilities to monitor their vital signs in real time. Furthermore, climbers can surpass pre-established safety criteria to initiate automated SMS notifications that guarantee timely assistance in case of emergency. These developments allow mountain climbers and rescue crews to work together more efficiently, speeding up reaction times and increasing results in urgent situations.

KAVIYA R

LOGANATHAN S

SRILEKHA R

STUDENT PARTICIPATION

S.No	Name Of The Student	Name Of The Event	Organized By	Date
1	S.Narain	Syposium (Circuit debugging)	Salem College of Engineering	05-09-2024
2	R.Hemaneshwaran	Syposium (Circuit debugging)	Salem College of Engineering	05-09-2024
3	S.Narain	Syposium (Paper presentation)	Salem College of Engineering	05-09-2024
4	R.Hemaneshwaran	Syposium (Paper presentation)	Salem College of Engineering	05-09-2024
5	Anbalagan P	Syposium	KSR College of Engineering	28.09.2024
6	Nandhakumar S	Syposium	KSR College of Engineering	28.09.2024
7	Arulguhan G V	Syposium	PSG College of Technology	05.10.2024 & 06.10.2024
8	Firozkhan A	Syposium	Kongu Engineering College	09.10.2024
9	Anupriya K	Syposium	Kongu Engineering College	09.10.2024
10	Kalaiventhan T	Syposium	Kongu Engineering College	09.10.2024
11	Dharshika B	Syposium	Kongu Engineering College	09.10.2024
12	Naveena.S	Workshop	Excel Engineering College	16.10.2024
13	Nagajayaruba K S	Workshop	Excel Engineering College	16.10.2024
14	Gayathri N	Workshop	Excel Engineering College	16.10.2024
15	Disha V	Workshop	Excel Engineering College	16.10.2024
16	Kaviraj M	Syposium	Government College of Engineeirng	22.10.2024
17	Suryaprakash I	Syposium	Government College of Engineeirng	22.10.2024
18	Shreehari M	Syposium	Government College of Engineeirng	22.10.2024
19	P.Gunasekaran	Syposium (Quiz gaze)	Government College of Engineering	22-10-2024
20	P.Gunasekaran	Syposium (Tech Quiz)	Government College of Engineering	22-10-2024
21	M.Nithish	Syposium (Paper Presentation)	Government College of Engineering	22-10-2024

22	M.Nithish	Syposium (Tech Quiz)	Government College of Engineering	22-10-2024
23	Kavin R	Syposium	Government College of Engineeirng	24.10.2024
24	Koshigan S	Syposium	Government College of Engineeirng	24.10.2024 & 25.10.2024
25	Ranjithkumar P	Syposium	Government College of Engineeirng	24.10.2024 & 25.10.2024
26	Jeevaa T A	Syposium	Government College of Engineeirng	24.10.2024 & 25.10.2024
27	Rajalakshmi E	Syposium	Kongu Engineering College	25.10.2024
28	Kaviyasri N	Syposium	Kongu Engineering College	25.10.2024
29	Libiga M	Syposium	Kongu Engineering College	25.10.2024
30	Kaviyasri V	Syposium	Kongu Engineering College	25.10.2024
31	Manimegala M	Syposium	Sasurie College of Engineering	26.10.2024
32	Kowsika E	Syposium	Sasurie College of Engineering	26.10.2024
33	Karthika V	Syposium	Sasurie College of Engineering	26.10.2024
34	Nivas A	Syposium	Sasurie College of Engineering	26.10.2024
35	S.Narain	Syposium	Sasurie college of Engineering	26-10-2024
36	R.Hemaneshwaran	Syposium	Sasurie College of Engineering	26-10-2024
37	M.Nithish	Syposium (Tech interrogate)	Sasurie College of Engineering	26-10-2024
38	M.Nithish	Syposium (Tech talks and Tech interrogate)	Sasurie College of Engineering	26-10-2024
39	P.Gunasekaran	Syposium (Tech talks and click your thoughts)	Sasurie College of Engineering	26-10-2024
40	Manimegala M	Workshop	Bannari Amman Institute of Technology	09.11.2024
41	Nivas A	Workshop	Bannari Amman Institute of Technology	09.11.2024
42	S.Narain	Workshop	Bannari Amman Institute of Technology	09.11.2024
43	R.Hemaneshwaran	Workshop	Bannari Amman Institute of Technology	09.11.2024

44	M.Nithish	Workshop	Bannari Amman Institute of Technology	09.11.2024
45	Manimegala M	Syposium (Circuit Innovators)	Bannari Amman Institute of Technology	09.11.2024
46	Nivas A	Syposium (Circuit Innovators)	Bannari Amman Institute of Technology	09.11.2024
47	Naveen M	Symposium	Karpagam Institute of Technology	06.02.2025 to 07.02.2025
48	Rajasekar.M	Symposium	Karpagam Institute of Technology	06.02.2025 to 07.02.2025
49	Rajkumar.S	Symposium	Karpagam Institute of Technology	06.02.2025 to 07.02.2025
50	Nandhakumar.S	Symposium	Karpagam Institute of Technology	06.02.2025 to 07.02.2025
51	Nivas A	Symposium (Sight-on-Site)	Jai Shriram Engineering College	16.03.2025
52	Divya Bharathi B	Seminar	Excel Engineering College	19.03.2025
53	Priyadharsan K	Seminar	Excel Engineering College	19.03.2025
54	Nivas A	Symposium (Circuit Design)	Kangeyam group of institutuons	25.03.2025 & 26.03.2025
55	Anthonyraj V	Symposium (Circuit Design)	Kangeyam group of institutuons	25.03.2025 & 26.03.2025
56	Anthonyraj V	Symposium (General Quiz)	Kangeyam group of institutuons	25.03.2025 & 26.03.2025
57	Anthonyraj V	Symposium (Poster Making)	Kangeyam group of institutuons	25.03.2025 & 26.03.2025
58	Anthonyraj V	Workshop on AI tools	Kangeyam group of institutuons	25.03.2025 & 26.03.2025
59	Anthonyraj V	Code Fest	Kangeyam group of institutuons	25.03.2025 & 26.03.2025
60	Anthonyraj V	Workshop on IOT	Kangeyam group of institutuons	25.03.2025

				& 26.03.2025
61	Anthonyraj V	Symposium (Circuit Debugging)	Kangeyam group of institutuons	25.03.2025 & 26.03.2025
62	Kaviya Sri N	Symposium (Singing Battle)	Kangeyam group of institutuons	25.03.2025 & 26.03.2025
63	Kaviya Sri V	Symposium (Dance Battle)	Kangeyam group of institutuons	25.03.2025 & 26.03.2025
64	Kaviya Sri V	Symposium (Group Dance)	Kangeyam group of institutuons	25.03.2025 & 26.03.2025
65	Libiga M	Symposium (Group Dance)	Kangeyam group of institutuons	25.03.2025 & 26.03.2025
66	Karthika V	Symposium (Paper presentation)	Nandha College of Technology	05.04.2025
67	Kowsika E	Symposium (Paper presentation)	Nandha College of Technology	05.04.2025
68	Sudharsan S	Symposium (Technical Quiz)	Nandha College of Technology	05.04.2025
69	Arulguhan G V	Symposium (Technical Quiz)	Nandha College of Technology	05.04.2025
70	Ranjithkumar P	Symposium (Technical Quiz))	Nandha College of Technology	05.04.2025
71	Vidhya Bharathi J	Symposium (Crack the music)	Nandha College of Technology	05.04.2025
72	Naveena A	Symposium (Crack the music)	Nandha College of Technology	05.04.2025
73	Jeevarakshini K	Symposium (Crack the music)	Nandha College of Technology	05.04.2025
74	Jeevaa T A	Symposium (Field of Battle)	Nandha College of Technology	05.04.2025
75	Kavin R	Symposium (Field of Battle)	Nandha College of Technology	05.04.2025
76	Koshigan S	Symposium (Field of Battle)	Nandha College of Technology	05.04.2025
77	Manimegala M	Symposium (Fox Hunting Signal Tracking)	SSM College of Engineering	16.04.2025

78	Nivas A	Symposium (Fox HuntingSignal Tracking)	SSM College of Engineering	16.04.2025
79	Anthonyraj V	Symposium (Technical Quiz)	SSM College of Engineering	16.04.2025
80	Giridharan G	Symposium (Technical Quiz)	SSM College of Engineering	16.04.2025
81	Karthika.V	Symposium (Paper Presentation)	SSM College of Engineering	16.04.2025
82	Kowsika. E	Symposium (Paper Presentation)	SSM College of Engineering	16.04.2025

Prize Awarded

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1	S.Narain	Syposium	Salem College of Engineering	05-09-2024
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3	S.Narain	Syposium	Salem College of Engineering	05-09-2024
4	P.Gunasekaran	Syposium (Quiz Gaze)	Government College of Engineering	22-10-2024
5	Libiga M	Syposium	Kongu Engineering College	25.10.2024
6	Kaviyasri V	Syposium	Kongu Engineering College	25.10.2024
7	M.Nithish	Syposium	Sasurie College of Engineering	26-10-2024
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9	Nivas A	Syposium (Circuit Innovators)	Bannari Amman Institute of Technology	09.11.2024
10	Nivas A	Symposium (Sight-on-Site)	Jai Shriram Engineering College	16.03.2025
11	Nivas A	Symposium (Circuit Design)	Kangeyam group of institutuons	25.03.2025 & 26.03.2025
12	Anthonyraj V	Symposium (Circuit Design)	Kangeyam group of institutuons	25.03.2025 & 26.03.2025
13	Kaviya Sri N	Symposium (Singing Battle)	Kangeyam group of institutuons	25.03.2025 & 26.03.2025
14	Kaviya Sri V	Symposium (Dance Battle)	Kangeyam group of institutuons	25.03.2025 & 26.03.2025

15	Kaviya Sri V	Symposium (Group Dance)	Kangeyam group of institutuons	25.03.2025 & 26.03.2025
16	Libiga M	Symposium (Group Dance)	Kangeyam group of institutuons	25.03.2025 & 26.03.2025
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26	Kavin R	Symposium (Field of Battle)	Nandha College of Technology	05.04.2025
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32	Karthika.V	Symposium (Paper Presentation)	SSM College of Engineering	16.04.2025
33	Kowsika. E	Symposium (Paper Presentation)	SSM College of Engineering	16.04.2025