M.Kumarasamy College of Engineering
NAAC Accredited Autonomous Institution
Approved by AICTE & Affiliated to Anna University
ISO 9001:2015 Certified Institution
Thalavapalayam, Karur - 639 113, TAMILNADU.

MAKEATHON CONTEST

Hardware Design

Problem statement

Content: Solution for hardware device Errors and Solution for Coding Errors to make smart products

ID: MKCE - Hardware - 01

Problem Statement Title: Open Invention

Any real time problem which is not listed in the list of problem statements can be selected by the team.

ID: MKCE - Hardware - 02

Problem Statement Title: Indoor Air Quality Monitoring System

Develop a system to monitor indoor air quality in public spaces using IoT devices. The system should be able to detect pollutants, measure air quality, and provide real-time alerts to building management and occupants.

ID: MKCE - Hardware - 03

Problem Statement Title: Smart Farming

Use data science and IoT to develop a smart farming system that optimizes crop yield and reduces waste. The system should be able to collect data on soil moisture, temperature, and other factors to make real-time decisions on irrigation, fertilization, and other farming practices.

ID: MKCE - Hardware - 04

Problem Statement Title: Robotics

Develop an obstacle avoidance system for robots that can detect and avoid obstacles in their path, and provide real-time navigation and control for various applications, such as warehouse logistics, healthcare, and manufacturing.

ID: MKCE - Hardware - 05

Problem Statement Title: Industrial Automation

Develop an IoT-based system that can enable gesture control for industrial automation systems, such as robotic arms or assembly lines, to improve productivity and reduce worker fatigue.

ID: MKCE - Hardware - 06

Problem Statement Title: Smart Navigation

Develop an IoT-based system that can provide real-time navigation guidance for the visually impaired, such as through audio feedback or haptic sensors, and provide route optimization and obstacle avoidance capabilities.

ID: MKCE - Hardware - 07

Problem Statement Title: Smart Home

Develop an IoT-based system that can automate various home appliances and systems, such as lighting, temperature, and security, and provide voice or gesture-based controls for individuals

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ID: MKCE - Hardware - 08

Problem Statement: After nearing the microphone and speaker, create the noise and echo signal. Give a solution for the following problem using IC741.

The proposed system can make good quality voice signal in well-condition

1) When microphone and speaker using the nearby.

2) When two or more microphones use in same place.

ID: MKCE - Hardware - 009

Problem Statement Title: IoT Gateways for Manufacturing Systems

Need to combines the technologies of automation and IT, and develop the gateway which uses Industrial Internet of Things (IIoT) technology

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ID: MKCE - Hardware - 010

Problem Statement Title: Develop an IoT enabled solution with Android application to give real-time parking space available on the Campus / City / Resident Societies Whenever a person wants to find a parking space on the campus, he has already registered to the application using his user id and password. When he finds for the parking space, the server will send a response with the available parking details, real-time mapped directions and real-time parking space to allocate parking according to the size of the vehicle. The application would be smart enough to identify whether the car is heading towards the same parking space or not. If not, the application would re-route the same car to another nearest available parking space.

ID: MKCE - Hardware - 011

Problem Statement Title: To detect air quality inside the cabin and improve it Typically truck drivers operate for long hours and at times in highly polluted environments like mines. Driver health and alertness while driving is key to avoid accidents at work site. Sometimes air quality deteriorates inside the cabin, and this could lead to driver fatigue. Can you come up with solutions that can detect the air quality level inside the cabin and improve it, and at the same time alerting the driver as well as fleet management about the vital health characteristics of the driver like heart rate, oxygen level etc.

ID: MKCE - Hardware - 012

Problem Statement Title: EV Charging Network Challenge

The success of EV adoption hinges upon successful deployment of EV charging infrastructure. Location analysis for EV charging stations helps optimize utilization and maximize benefits that include the number of EVs in the area and grid infrastructure. The core of the problem is demand and supply. The objective is to develop a sharing charging model to solve the location problem for EV charging stations.

ID: MKCE - Hardware - 013

Problem Statement Title: A system of IoT devices to measure load weight in a dumper

The object is to provide a solution to measure the load weight of the dumper using IoT technology. The solution should give dynamic measurements based of coal loaded into the dumper which will help stop overloading of the dumper and hence mitigate the risks of fatal accidents.

ID: MKCE - Hardware - 014

Problem Statement Title: Fault Identification and Classification

The electrical power system consists of so many different complex dynamic and interacting elements, which are always prone to disturbance or an electrical fault. The use of high capacity electrical generating power plants and concept of grid, i.e. synchronized electrical power plants and geographical displaced grids, required fault detection and operation of protection equipment in minimum possible time so that the power system can remain in stable condition. Develop an AI algorithm to correctly identify and classify the electrical fault.

ID: MKCE - Hardware - 015

Problem Statement Title: Dry and Wet Waste Segregation

Dry and wet waste segregation is a process that reduces the amount of waste that goes to landfills and recycles materials. Electrical engineering students can develop an automated system to improve waste management practices and reduce the impact of waste on the environment.

ID: MKCE - Hardware - 016

Problem Statement Title: Safety System for EV

All-electric vehicles, PHEVs, and HEVs have high-voltage electrical systems that typically range from 100 to 600 volts. Their battery packs are encased in sealed shells and meet testing standards that subject batteries to conditions such as overcharge, vibration, extreme temperatures, short circuit, humidity, fire, collision, and water immersion. Manufacturers design these vehicles with insulated high-voltage lines and safety features. Design a system that deactivates the electrical drivetrain system when they detect a collision or short circuit.

ID: MKCE - Hardware - 01

Problem Statement Title: Smart Traffic Management System

Develop an intelligent traffic management system that uses IoT devices to collect data and optimize traffic flow. The system should be able to analyze traffic patterns and make real-time decisions to minimize congestion, reduce travel time, and improve safety.
