



VIMAL JYOTHI ENGINEERING COLLEGE

JYOTHI NAGAR, CHEMPERI – 670632, KANNUR, KERALA

Affiliated to APJ Abdul Kalam Technological University, Approved by AICTE
ISO 9001 : 2015 Certified | Accredited by Institution of Engineers (India), NBA, NAAC
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NAAC Cycle 2

Criterion: 3.1.1

2021-2022

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Remote Mine Carrier

M18 Claymore is a directional, anti-personnel mine used to attack enemies coming through a passage or from a particular direction. Usually, the mine is fixed at a certain point, facing the direction through which the enemies are supposed to pass through. Detonation is triggered manually through a wired electric blasting cap assembly. The main problem with this setup comes to light at relatively wide pathways through which the enemy troops may stray out of the range of the mine. The direction of the mine cannot be changed remotely; hence, its effectiveness has greatly decreased. The sole purpose of our project is to design a guidable base for the m18 claymore that enables small directional adjustments when necessary, from a safe distance. We analyze different aspects of the base requirements, materials to be used, range, drive system to be used, battery requirements, etc. We also try to add a night vision-enabled camera that will help better position the mine while controlling the base from a safe distance.



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2021-2022

Real time vital analyzation system and gesture navigation for disabled people

People in modern times try to get everything within a short period. Nowadays, people want to realize their current health condition quickly and want proper care. However, older and disabled people are incapable of assistance. Even if they wanted to tell someone about their health condition, they would face so many difficulties. Since sign language is the primary form of communication for disabled people, normal people are incapable of understanding their sign language. It aims to facilitate effective communication between deaf and mute people and non-mute people. People want to recognize their current health status and receive proper care quickly. Health monitoring systems measure body temperature and heart rate, as well as pulse sensors. A basic health monitoring and caring system for elderly and paralyzed people will be developed. The system will help monitor the primary health condition of the elderly and disabled people. This will ensure the safety of the elderly and the disabled. A smart glove with hand sign interpretation is proposed to reduce the communication gap between speech-impaired people and the able-bodied.



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2021-2022

Machine learning-based waste segregation system for mixed waste

Traditionally, the waste is manually collected from the houses and dumped in dump yard. The waste is disposed of by either burning or simply used as a landfill leading to the emission of higher amounts of greenhouse gases, which affect the environment. It enabled waste segregators for segregating municipal waste into biodegradable and non-biodegradable by smart waste segregators equipped with IR sensors, Moisture sensors, and Metal sensors for segregating the metal, wet waste, and dry waste respectively. The Motors connected with the conveyor belt are used for the smooth passing of waste over the system surface and the dumped wastes are segregated successfully. The system is connected to the cloud so that the sensed data can be stored in the cloud for further processing.





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Blind assistance using artificial intelligence

A visually impaired person has to come across many hurdles in his/her day-to-day life, the barrier of low vision has not let them to become part of this society. Worldwide, there are more than 2 billion people who are visually impaired and they account for 4.25 percent of the population. Whether due to congenital inheritance, acquired diseases, accidental injuries, or other reasons, visual impairment causes a certain level of inconvenience to these lives. Technology like sensors and GPS, white cane, and some navigation systems serve as a miracle in the life of the blind which has changed their world completely. A novel visual aid to help completely blind by using Raspberry Pi, camera, sensors, and advanced image processing algorithms for object detection is introduced.





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Dry hand sanitizer and health check-up machine

Here we propose an automatic hand sanitization and a health check-up device. Mist spray is a new and effective method for disinfection. Using mist instead of liquid sanitizer makes it more effective and reduces the usage of water by up to 90%. Mist is in the form of tiny water particles that can move faster and more effectively and reach every nook and corner which makes it more effective. Along with hand sanitization, a health check-up is also done. It is a small portable device with two cavities where we can insert our hands. When the hand is inserted, the hands get sanitized by the mist produced inside the cavity. While the hand is getting sanitized a health check-up is also carried out. The body temperature, blood oxygen saturation levels and heart rate are monitored in the health check-up. The data is analyzed, and warnings are given if required. A report card is generated, and this can be shared to the user's smartphone via a QR code generated by the device. This is a smart device that offers a fully automated service.





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Smart dustbin using IoT

As people get smarter, so do things. While the thought comes up for smart cities, there is a requirement for Smart waste management. The idea of a Smart Dustbin is for smart buildings, Colleges, Hospitals, and Bus stands. The Smart Dustbin thus thought an improvement of the normal dustbin by elevating it to be smart using sensors for garbage level detection and sending messages to the user updating the status of the bin using GSM module as soon as the dustbin is full a smart solid waste collecting system. It is common to witness garbage spilled out in and around the dustbins. The area around improperly maintained dustbins can house disease-spreading insects like mosquitoes, flies, bees, and driver ants. Air pollution due to a dustbin can produce bacteria and viruses which can produce life-threatening diseases in human beings.





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Flood landslide prediction using cloud computing

Floods and landslides are universal and it has become a common scenario nowadays. People all around the world are victims of this calamity in massive numbers. “Flood Risk Reduction System” is a way of thinking to reduce the after-effects of floods and as much as possible to give alerts before they occur. We know that flood affects more areas quickly once it is originated, only a few people are alerted of flood generation and sometimes they will be isolated by flood. Our main objective through this is to provide alerts of the flood as soon as possible and to reduce the after-effects of the flood. We are using both software and hardware to alternate the existing system. It consists of the latest technologies also, such LoRa technology, water level sensors soil moisture sensors, etc. We collect the data from these sensors and send it to the network sever, from the server, it is further transmitted to the mobile application, which is already installed by the user. The mobile application has the feature to ‘mark as safe’ button in which the user can pass the information to everyone that they are safe. The mobile application also provides facilities to know the amount of rainfall and temperature through the ‘weather report’ button, the nearby secure shelter point can be viewed through the ‘nearby shelter’ button, and the ‘first aid’ button provides the facility to contact the hospital. It is a concept that provides confidence and fearlessness to the people to face any kind of calamities.





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Home energy management systems

Energy management is the monitoring, optimizing, and controlling the energy flow in a building or facility with the goal of conservation. It is the proactive, organized, and systematic coordination of procurement, conversion, distribution, and use of energy to meet the requirements, taking into account environmental and economic objectives. Home energy management is one of the technologies that, even though it has already emerged in the market in first-world countries, hasn't really established itself in the Indian market or other third-world countries due to its being expensive. Proper energy management can help people save a good part of their incomes while also reducing their impact on the environment. The project attempts to create a home energy management system that monitors the energy consumption in a house. It also identifies the loads consuming excess energy, informs the customer, and automatically turns it off if necessary. Thus helping to reduce the energy bills and wastage of energy.





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Development of Fertile Egg Detection and Incubation System Using Image Processing and Automatic Handling

This project proposal focuses on the development of an innovative system for detecting fertile eggs and automating the incubation process in poultry farming. Traditional methods of egg detection and incubation often involve manual labor and are prone to errors, leading to inefficiencies and reduced hatch rates. By leveraging image processing techniques and automatic handling mechanisms, this project aims to revolutionize egg hatchery operations, enhancing efficiency, accuracy, and overall productivity. The proposed system consists of a series of integrated components, including cameras for image capture, image processing algorithms for fertile egg detection, and automated handling mechanisms for egg sorting and incubation. High-resolution cameras positioned above the egg trays capture images of the eggs, which are then analyzed using advanced image processing algorithms to identify fertile eggs based on predefined criteria such as size, shape, and color. Upon detecting fertile eggs, the system automatically sorts them from infertile or defective eggs, ensuring that only viable eggs are selected for incubation. The automated handling mechanism transports the fertile eggs to designated trays within the incubator, where they undergo the incubation process under controlled environmental conditions.



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Fall detection and early diagnosis system

The project proposal aims to develop a comprehensive Fall Detection and Early Diagnosis System to address the critical issue of fall-related injuries, particularly among elderly individuals and patients with mobility impairments. Falls pose a significant risk to the health and well-being of vulnerable populations, often leading to serious injuries and long-term complications. This project seeks to leverage advanced technologies such as wearable sensors, machine learning algorithms, and telemedicine capabilities to detect falls promptly and provide early diagnosis and intervention. The proposed system consists of wearable sensors integrated into clothing or accessories worn by individuals at risk of falling. These sensors continuously monitor movement patterns, gait characteristics, and vital signs, transmitting real-time data to a centralized monitoring platform. Through machine learning algorithms, the system analyzes sensor data to detect abnormal movement patterns indicative of a fall event with high accuracy and reliability. Upon detection of a fall, the system triggers immediate alerts to designated caregivers, family members, or emergency responders, enabling prompt assistance and intervention. Additionally, the system incorporates telemedicine functionalities, allowing healthcare providers to remotely assess the individual's condition and provide timely medical assistance or guidance. Furthermore, the Fall Detection and Early Diagnosis System includes features for proactive fall prevention and risk assessment. By analyzing historical data and identifying risk factors associated with falls, the system can provide personalized recommendations for fall prevention strategies, such as exercise programs, environmental modifications, and assistive devices.

