Project details ECE 2020-21

1. **Project title**: "ARECANUT SEGREGATION MACHINE USING COMPUTER VISION"

Student's: Charan k, Preethi Dsouza M, Rashmi B, Roshini S

Guide: Dr. Mahesh Prasanna K

Abstract:

Agriculture is, doubtlessly, one of the most relevant fields that drive Indian economy and it is also of great importance for dealing with a vital aspect of any living being alimentation. In this vast and diverse area different regions are more likely to produce different aliments according to the specific conditions of soil and climate in the particular region, and in India, the coastal region is great producer of arecanut. Arecanut is a tropical crop, popularly known as betel nut, as its usage in the country is for mastication with betel leaves. Arecanut is not a uniform item and there are some variations in different arecanuts that make it divided into various types. In arecanut plantation it is necessary to segregate the different types of arecanut and this work is done manually which consumes much time and more effort. This project proposes an automatic approach of doing this segregation using electronic circuits and digital image processing.

2. **Project title**: "ELECTROCARDIGRAM BASED ATRIAL FIBRILLATION DETECTION USING ARTIFICIAL INTELLIGENCE"

Student's: Krithika K, Akhila M, Archana A, Anushree

Guide: **Shrikanth Rao S.K**

Abstract:

 Atrial Fibrillation (AF) is one of the most common heart rhythm disorder observed by the physician on a daily basis. Automatic detection of AF is one of the major challenges in the field of heart arrythmia. In this paper we propose an algorithm to classify Electrocardiogram (ECG) signal into three classes namely Normal, AF and other rhythms. Three different methods namely Discrete Wavelet Transform (DWT), Butterworth filter and Savitzky-Golay filter are used separately to remove high frequency components and baseline wander. Two dimensionality reduction techniques namely Principal Component Analysis (PCA) and Independent Component Analysis (ICA) are used for feature extraction. Finally class specific accuracy of three classes viz: Normal, AF and other rhythms are calculated using Decision Tree (DT) and Deep Convolutional Neural Network(DCNN) classifier separately. DWT method combined ICA and DCNN classifier provided improved performance compared to other methods. The proposed method can be used for mass screening in hospitals for detecting cardiac abnormalities

3.**Project title**: "SMART AUTOMATED IRRIGATION SYSTEM WITH MOBILE APPLICATION USING IOT"

Student's: Anantheshwar Pai B, Anoop J, Ashish Shetty, Deekshith P S

Guide: Dr. Mahantesh R. Choudhari

Abstract:

 Smart Automated Irrigation System is next generation irrigation system which strives to bring the improvement in the field of agriculture by focusing on one of important aspect called the irrigation. With advancement of Technology and rapid use of this technology from the industry to the houses and hands of common people. IOT and internet has gained a lot of popularity and had improved the working conditions in industries and standard of living of the common man. With this project we strive to bring same technologies to solve the agricultural problems. It is very hard for farmers to manage the irrigation in large lands with a lesser number of resources like pumps and water sources. This project tries to solve problem with the use of IOT and mobile application. Farmers with the system we built will be able to make the water flow to different part of the land easily through their mobile application from any part of the world. Also, they are able to monitor the quantity of water sent, weather condition, temperature, moisture in soil using sensors. They are also able to automate the process with respect to time or the sensor input. (Soil moisture, temperature, etc.)

4**. Project title**: "PORTABLE ECG, HEART BEAT AND HEALTH CARE MONITORING SYSTEM"

Student's: Niriksha Rai,Sini,Divyashree,Vidyalakshmi

Guide: Rajani Rai B

Abstract:

The aim of our project is to make the Portable ECG Monitoring platform based on the 3-Lead Einthoven's triangle for home and ambulance use. The portable ECG monitoring system significantly improves the quality of life of the cardiac patients, reflected primarily in the permanent monitoring. The task has been accomplished by obtaining the output through ECG module, heartbeat module, body temperature sensor and personal computer as the monitor. The hardware implementations are using commercially available devices. It brings the freedom for the physician as well as for the doctor to check up on patient's heart from time to time by seeing the real-time waveforms on their computer which is shared using TeamViewer. Hence, it is very reliable and portable as well as cost effective. It also notifies the directed person through mobile, if the person has high temperature or if the heartbeat does not lie at the expected range.

5. **Project title**: "DESIGN AND DEVELOPMENT OF NONINVASIVE HEALTHCARE SYSTEM TO PREVENT AND CONTROL COVID-19"

Student's: Akshatha A, Mithun M, Mohith, Niveditha Rai H

Guide: **Vinay P**

Abstract:

During COVID-19 crisis food security, public health, and employment and labour issues, in particular workers' health and safety, converge. Adhering to workplace safety and health practices and ensuring access to decent work and the protection of labour rights in all industries will be crucial in addressing the human dimension of the crisis. For the safety of the employee, labor or staff the company or any workplace the checking of body temperature and hand sanitizer of each staff is now mandatory. In our project the we providing a system which will help for this situation. Noninvasive Healthcare System (NIHS) is a system which will automatically detect the face of the person and his body temperature and store that information in a excel sheet for future reference automatically. Also, this system sanitizes the hands of the person. We all know that due to covid-19 before entering any institution, hospital or malls checking the body temperature and sanitizing is mandatary. For that a person should be wait near by the door and he should check the body temperature each person and marked it into a system it will take time and also risk for his life. To overcome this problem, we can use NIHS. By using NIHS we can securely check and store the information of the person and also save the time and avoid the use of third party.

6. **Project title**: "AUTOMATIC WASTE SEGREGATION AND MONITORING SYSTEM."

Student's: Mahima Dimple U S, Melisha Sharon Dsouza, Pavitra Padmanabha Hebbar, Swikruta Madan Naik

Guide: **Gurusandesh M**

Abstract:

Solid waste management is one of the major aspects which has to be considered in terms of making urban area environment healthier. The common dustbins placed by the municipal corporation are leading number of health, environmental and social issues. Various causes like improper dust bin placement in city, improper system of collecting waste by City Corporation, and more specifically people are not aware enough to use dustbins in proper way. These various major causes are leading serious problems like, an unhygienic condition, air pollution, and unhealthy environment creating health disease. An automatic solid waste management system is designed, that will check status and give alert of dustbinfullness and more significantly system has a feature to literate people to use dust bin properly. Thus, presented solution achieves smart solid waste management satisfying goal of making Indian cities clean, healthy and hygienic.

7. **Project title**: "VOICE AND JOYSTICK CONTROLLED WHEECHAIR"

Student's: Mr. Sanjan, Mr. Sathwik M, Mr. Sharan S, and Mr. Likhith Rai S

Guide: Mr. Mahabaleshwara Bhat

Abstract:

This project is based on voice and joystick controlled wheelchair system by using speech recognition module and joystick. The system is operated by voice of consumer or by joystick. The main objective is to facilitate the movement of physically handicapped or diseased and elderly people who can't move well. This design will help handicapped or diseased people to operate and live independently. A handicapped or diseased person having locomotive disabilities needs a wheelchair for performing functions that require them to move around. They may do it manually with his hands but as many of them have upper weak limbs so it is desirable to provide them with a voice control motorized wheelchair. As the wheelchair can move at a good speed it becomes important for the wheelchair to avoid obstacles automatically in real time. All this must be provided at a affordable cost for as many handicapped or diseased persons as possible. With all this in mind we provide a voice and joystick controlled easy operation wheelchair.

8. **Project title**: "AUTOMATIC WASTE SEGREGATION AND MONITORING SYSTEM"

Student's: Abhishek K, Shashank G Rao, Suraj Shet, Swapna Priya

Guide: **AKSHAY S P**

Abstract:

Rapid increase in population has led to improper waste management in metro cities and urban areas which has resulted in spreading of diseases. It is estimated that 2.02 billion tons of municipal solid waste was generated universally in 2006. The segregation, transport, handling and disposal of waste must be managed properly to minimize the risks to the public, and the environment. An efficient method to dispose the waste has been designed in our project, "automatic waste segregator and monitoring system". This paper proposes an automatic waste segregator (AWS) which is a cheap, easy to use solution for a segregation system at households, so that the wastes can be sent directly for processing. Automatic waste segregator is designed to sort the waste into three main categories namely; metallic, organic and dust, thereby making the waste management more effective. Ultrasonic sensors are added for monitoring waste collection process. The sensors would be placed in all the garbage bins. When the garbage reaches the level of the sensor, then the indication will be given to a arduino. The arduino will give indication to the driver of garbage collection truck by sending SMS using GSM technology.

9. **Project title**: "MILK QUALITY TESTING"

Student's: Ankitha s shetty, Chaithanya, Dakshitha, Jalajakshi

Guide: Mr. Naveena C

Abstract:
 Milk is most commercially sold commodity both by local vendor's as well super markets. In local areas to increase the yield certain adulterants are added which may affect the nutritional quality of milk. Milk adulteration is a social problem. It exists both in the backward and advanced countries. Consumption of adulterated milk causes serious health problems and a great concern to the food industry. The Country milk producers and consumers facing problem to find the quality of milk, accept the fair of price and consumption. So, it is necessary to ensure the quality of milk by measuring the types of adulterants that are added to the milk.
This project analyses the quality of milk using different sensors. Here we are detecting pH, odour, taste, and temperature and SNF value of milk thereby knowing whether it is consumable or not. In this, all the sensors are combined to form compact and flexible system which analyse and classify the quality of milk into different grades and finally output displayed on LCD screen. Problem faced in small diaries and by the individuals can be prevented by detecting the quality of milk, and also prevent from causing the hazardous diseases.
This project is implemented using microcontroller. All the sensors are combined to form compact and flexible system which analyze and classify the quality of milk into different grades and finally output displayed on LCD screen. The value obtained by the sensors is then transferred to the PC.

10. **Project title**: "CONTENT AWARE IMAGE RESIZING"

Student's: Adarsha Kumara M, Akhilesh K, Dhanraj, Dhanush

Guide: **Prof. Suhandas**

Abstract:

Effective resizing of images should not only use geometric constraints, but consider the image content as well. We present a simple image operator called seam carving that supports content-aware image resizing for both reduction and expansion. A seam is an optimal 8-connected path of pixels on a single image from top to bottom, or left to right, where optimality is defined by an image energy function. By repeatedly carving out or inserting seams in one direction we can change the aspect ratio of an image. By applying these operators in both directions, we can retarget the image to a new size. The selection and order of seams protect the content of the image, as defined by the energy function. Seam carving can also be used for image content enhancement and object removal. We support various visual saliency measures for defining the energy of an image, and can also include user input to guide the process. By storing the order of seams in an image we create multi-size images, that are able to continuously change in real time to fit a given size.

11. **Project title**: "IOT BASED ANTI-SMUGGLING SYSTEM FOR TREES"

Student's: Deeksha A, Deeksha Rai P, Dhanyashree A and Sanidhya S Rai

Guide: **Mrs. Nirupama K**

Abstract:

The smuggling of trees is a very long and nostalgic issue. Trees are vulnerable to smugglers and cutting of trees like Red sanders, Teak wood, Sandal wood are still a great problem. In spite of growing technology, protection for trees in a large area like forest is difficult. It is also expensive to implement. We are making a system that can prevent the smuggling of valuable trees which would in turn stop the de-forestation and uphold the Environmental stability, which would help to solve one of the issues with the Global Warming. The system consists of Node MCU ESP8266 microcontroller interfaced with smoke sensor, tilt sensor, temperature and humidity sensor. In case of any problem the tree unit will send an alert message to the mobile using android application. And also, real time data is being updated from the tree unit to the monitoring section using IOT. This ensures data security and provides privacy.

12. **Project title**: "SOLAR BASED MULTIPURPOSE AGRICULTURE ROBOT"

Student's: Ashray N ,Jeevan V Naik ,Lakshmi Devi N , Nithish

Guide: Mrs Prabha G S

Abstract:

In India nearly about 70 percentage of people are depending on agriculture. Numerous operations are performed in the agricultural field like seed sowing, grass cutting, ploughing etc. The present methods of seed sowing, pesticide spraying and grass cutting are difficult. The equipment's used for above actions are expensive and inconvenient to handle. So the agricultural system in India should be encouraged by developing a system which will reduce the man power and time. This work aims to design, develop and design of the robot which can sow the seeds, cut the grass and spray the pesticides, this whole system is powered by solar energy. The designed robot gets energy from solar panel and is operated using Bluetooth/Android App which sends the signals to the robot for required mechanisms and movement of the robot. This increases the efficiency of seed sowing, pesticide spraying, digging and grass cutting and also reduces the problem encountered in manual planting.

13. **Project title**: "LUNG CANCER CLASSIFICATION USING MACHINE LEARNING ALGORITHMS"

Student's: Mr. Sharath, Mr. Dileep A J, Miss. Jayashree, and Miss. Kavana M Bhat

Guide:Mr. Shivaprasad

Abstract:

The growth of cancerous cells in lungs is called lung cancer. The mortality rate of both men and women has expanded due to the increasing rate of incidence of cancer. Lung cancer is a disease where cells in the lungs multiply uncontrollably. Lung cancer cannot be prevented but its risk can be reduced. So detection of lung cancer at the earliest is crucial for the survival rate of patients. The number of chain smokers is directly proportional to the number of people affected with lung cancer. The lung cancer prediction was analysed using classification algorithms such as Naive Bayes, SVM, Decision tree and Logistic Regression. The key objective of this project is the early diagnosis of lung cancer by examining the performance of classification algorithms.

14. **Project title**: "HOME AUTOMATION USING SMART MIRROR"

Student's: Kshitheesha, Shashikantha T, Sourabh, Vishnu K V

Guide: **Shruthi P R**

Abstract:

Our lifestyle has evolved in such a way that optimizing time is the most important thing. Based on the user studies and prototype implementation, we present the development of an innovating appliance that incorporates interactive services of information, offered through a user interface on the surface of a mirror. Our work is based on the idea that we all look at the mirror when we go out, so why wouldn't the mirror become smart. The framework will offer basic services, like the presentation of personalized weather data, time, date and will incorporate some additional functionality, like reminder service by mobile synchronization and through social media. Our framework is based on detecting presence of human using Passive Infrared sensors and Wi-Fi connectivity. Once a person comes in front of the mirror, it displays the information that is being fed from the web. This data or information includes calendar, time, weather, news feed, notifications and so on. Our framework also discusses about the speech recognition and its application in control mechanism in home appliances and opening and closing of Windows. We use speech recognition to automate many tasks that usually requires hands-on human interaction, such as recognizing spoken commands to perform something like turning on lights or shutting a door. Our framework also introduces speech activated music player, and plays the music when a person gives a command.

15. **Project title**: "HOME AUTOMATION USING VOICE AND SECURITY USING FINGERPRINT SENSOR"

Student's: Adithya Nayak U, Shreejith C H

Guide: Mrs. Nisha G R

Abstract:

Home automation is one of the major growing industries that can change the way people live. Some of these home automation system target those seeking luxury and sophisticated home automation platforms, others target those with physical needs like elderly and disabled. A typical wireless allows to control appliances from a centralized control unit which is wireless. These appliances usually have to be specially designed to be compatible with each other and with the control unit for most commercially available home automation system. The developed system can be integrated as a single portable unit and allow one to wirelessly control lights, fans, air conditioners, television sets, electronic doors and turn on or off any appliances that are plugged into the wall outlets, get the status of different sensors and take action accordingly. According to major companises involved in speech recognition voice will be the primary interface between humans and machines in the near future. People who live alone might also need a helping hand at home. Therefore voice controlled home automation system with finger print sensor is designed so that the users can perform certain tasks by the use of their voices, moreover the system is designed to have hand held device so that the user can easily speak commands else they have to walk over to the microphone to speak. Having an app or remote will make the system more user friendly and portable. Moreover adding fingerprint sensor will help in providing additional security to the home, thus help in prevention of theft and make the home more secure.

16. **Project title**: "CLASSIFICATION OF CARDIAC ARRHYTHMIA USING ECG"

Student's: Leema Serrao, Nishmitha B R, Rakshitha V Rai, Shobharani K S

Guide: Ms Sowmya Anil

Abstract: An Electrocardiogram (ECG) is defined as a test performed to detect any abnormalities in the cardiac cycle. Arrhythmia is considered a life-threatening disease causing serious health issues in patients, when left untreated. An early diagnosis of arrhythmias would be helpful in saving lives. This study is conducted to classify patients into one of the four subclasses, among which one class represents absence of disease and the other three classes represent electrocardiogram records of various types of arrhythmias. The work proposed in this project has been implemented using MATLAB. In this project, we have proposed an efficient method to classify the ECG into normal and abnormal as well as classify the various abnormalities. The project is carried out on the dataset taken from the website physionet.org Data Repository. Few ECG signals from MIT-BIH arrhythmia and ECG-ID databases are downloaded from the PhysioNet for analysis. One easy way to get ECG signals directly in MATLAB compatible format (*.mat) is to use PhysioNet ATM. After the collection and filtering the ECG signal, morphological and dynamic features from the signal were obtained which was followed

by classification method. Here the classification learner app is used to train machine learning model to classify data. The proposed technique used helped us process, analyze and classify the ECG signals with an accuracy of 99% and with good convenience.

17. **Project title**: "MACHINE LEARNING BASED APPROACH FOR THE DETECTION OF ALZHEIMER DISEASE"

Student's: Rashmitha B ,Samanvi A Rai, Shravya A ,Sushma A

Guide: Mrs. Jovita Lasrado

Abstract:

In this project, algorithm is proposed for the detection of Alzheimer's disease and is focused on detecting the condition that would lead to Alzheimer's disease in future. Alzheimer's disease is a prevalent case now and it mostly affects the elderly people. The disease condition makes a person lose his memory and have trouble in doing his day-to-day activities, and progressively the condition leads to death. No treatment is available to completely cure the disease but it would be beneficial if the disease is detected earlier as the necessary aid can be provided.