Project details 2018-19

1. **Project title**: Smart Railway Control System

   Student's: Sowmya B.M ,Meghana V ,Nisha ,Nishma N Rai

   Guide: Mr.Mahabhaleshwar Bhat

   Abstract:

Rail way gate control system provides an automatic railway gate at the level crossing replacing the gates operated by the gate keeper by detecting train and stuck on the level crossing, generating corresponding alert signal and controlling the gate. The main objective of this project is to detect the major problems such as obstacles entry on to the track and cracks on the tracks. The solution is provided by developing a train detection module, crack detection module, alarm module and railway gate controller. Thus the railway accidents can be minimized.

2. **Project title**: Accelerometer based hand gesture controlled Robot using Arduino

   Student's: Swathi, Gayana Achari, Deeksha A.T. ,Sujatha

   Guide: Mrs.Prabha G.S

   Abstract:

Accelerometer based hand gesture controlled Robot using Arduino is a robot which is controlled by the hand gestures and not by the traditional button/remotes. The user have to wear a small transmitting device known as accelerometer which records the movements of user's hand and sends the signal to the comparator IC. This IC compares the input voltages for acceleration with a reference voltage and pass it to the encoder IC to encode and the encoded data is transmitted through the RF transmitter. At the receiving end the decoder IC decodes and send the data to the microcontroller. The data is then processed by the microcontroller and shifted to the motor driver and hence motor driver rotates the motor as per the signal or movement of hand.

3. **Project title**:   Atrial fibrillation using HOS cumulants

Students: Deepthi K,Gowthami,Chinmayi S.M.,Kanthi G

Guide: Dr.Roshan Joy Martis

Abstract:

Arrhythmia is a type of disorder that affects the pattern and rate of the heartbeat. Atrial Fibrillation (AF) is the most prevalent out of various arrhythmia conditions. AF increases the risk of cardio embolic stroke and other heart-related problems such as heart failure. Electrocardiogram (ECG) feature is used for the diagnosis of AF. The Atrial fibrillation using HOS is a methodology for ECG based pattern analysis for detection of atrial fibrillation, other and normal sinus rhythm beats. Higher order spectral analysis (HOS) is a good tool for the analysis of nonlinear systems and provides good noise reduction. The HOS cumulants are subjected to Linear Discriminant Analysis (LDA) for data reduction and are given to the K-NN classifier to classify the different pattern or classes of the ECG signal.

4. Project title: IoT based Thermoelectric Refrigeration system

Students: Chaithra C Shetty,Dhanusha,Meghana D,Mamatha S

Guide: Mr.Praveen

Abstract:

Refrigeration is a process in which work is done to move heat from one location to another. Refrigeration has many applications including household refrigerators, industrial freezers, cryogenics, air conditioning, and heat pumps. Cold is the absence of heat, hence in order to decrease a temperature, one "removes heat", rather than "adding cold." In order to satisfy the Second Law of Thermodynamics, some form of work must be performed to accomplish this. This work is traditionally done by mechanical work but can also be done by magnetism, laser or other means. IoT based thermoelectric refrigeration system is a working thermoelectric refrigerator that utilizes the Peltier effect to refrigerate and maintain a temperature between 5°C to 25°C.

5. Project title: Audio Communication using Li-Fi Technology

Students: Jyothishree, Harshitha S Naik ,Akshatha,Deepthi Rai

Guide: Dr.Roshan Joy Martis

Abstract:

Li-Fi technology is used to transmit the data using Visible light communication by using light-emitting diodes. This is an alternative to the existing wireless communication technologies that have increased network complexity. Signals are transmitted from one system to another by using LED as a Li-Fi transmitter and photodiode as a Li-Fi receiver. Li-Fi offers significant capability

to resolve the problem compared with Wi-Fi. It transmits data by switching LEDs on and off rapidly by changing light intensity which is not detected by human eye. The indoor visible light communication uses visible light spectrum to provide high rate data transmission which at the same time used as energy efficient illumination. In this way, the idea of the dual function of communication and illumination offers opportunity for efficient cost reduction and carbon footprint reductions.

6. Project title: Soldier Multi Intelligent Leading Equipment

Students: Deepak N, Vignesh Athresh H.R,Monisha H.J.

Guide: Mrs. Nisha G R

Abstract:

The infantry soldier of tomorrow promises to be one of the most technologically advanced modern warfare has ever seen. During enemy attack, soldiers face lot of problems regarding communication, safety and health issues. To overcome these problems there are many instruments to view their health status, which is compatible on soldier's armor. Thus Soldier Multi Intelligent Leading Equipment (SMILE) is designed. The bio-sensors in this system provide data regarding the soldier health by continuous monitoring. GPS collects the longitude and latitude data to find the location of the user. These devices are used to explore the possibility of embedding GPS devices into soldier's vests and uniforms so that field commanders can track their soldier's movements in real time. GSM module can be used for effective range of high-speed transmission and wireless communication that will be required to relay information on situational awareness related data during special operations and other missions. So, by using these equipment's soldier can be implemented with the basic lifeguarding system which is highly reliable and low cost.

7. **Project title**: Implementation of Feature Extraction and image classification Techniques in unmanned aerial vehicles(UAV)

Students: Shivakumar P.P.,Avinash C,Krishnammoorthy H,Mahantesh H.A

Guide: Ms.Sowmya Anil

Abstract:

The UAV, an aircraft without a human pilot controlled either autonomously by computers or by a remote control of the user on the ground can reach remote places inaccessible to humans that make them useful for emergency operations, disaster management and surveillance. The designed system is an attempt towards implementing the algorithm to extract features and classify the objects in the image acquired by the UAV camera. The camera will relay livestream video of desired areas to the ground station which will be processed on open CV to detect and

identify people and animals in the frames. The frames get processed for detection and extraction of features of objects that resemble human and animal shapes. These features are then matched against the features of the objects in the predefined data set. The dataset are text files that include the attributes of the desired objects to be detected. After matching, the result will be displayed as the name of the category to which the object belongs.

8. **Project title**:   Campus assistance system (CAS)

Students: Prithvi C Rai,Harshitha K.K,Preethesh Kotegar ,Nagendra S Hegde

Guide: Mrs.Sowmya Anil

Abstract:

Campus Assistance System (CAS) is an offline system that provides intra campus assistance. CAS is very useful for the organizations that are located in the substandard network areas as the proposed system doesn't require network connection i.e., it is offline. Additionally, the CAS takes user input and gives out the navigation assistance with the voice assistance. CAS also provides a blueprint of the intra-college and highlights the destination according to the clients demand and shows the way to the destination highlighted with directional arrows.

9. **Project title**:   Electrocardiogram Based Atrial Fibrillation Detection Using Principal Component Analysis and Decision Tree

 Students: Sindura Saraswathi,Prafulla B Prabhu,Keerthan Kolathaya N,Maneesh M.S

Guide: Mr. Shrikanth Rao

Abstract:

Electrocardiogram (ECG) is generally used to diagnose and identify different atrial tachyarrhythmias. The inherent complexity of ECG and the complex clinical interrelationships makes its interpretation a difficult task especially in borderline cases. This makes frequent misdiagnosis and cross classification during visual evaluation of ECG by the treating physician and primary healthcare professional. This project presents a computational methodology for ECG based pattern analysis of normal, atrial fibrillation (AF) and other rhythm signals. During AF, in addition to rhythm disturbances there is also variation in morphology, distribution of energy at different time locations and fibrillatory waves due to irregular beating. In the present methodology, the QRS complex is detected and each beat in the entire signal is segmented, the median beat is calculated for a given signal, the dimensionality is reduced using PCA and the resultant components along with energy values are used for classification using decision tree. The methodology provided 85.1 percent of overall accuracy which is reasonably high. The system developed can be used in many practical applications and can provide acceptable results in clinical implementations.

10. **Project title**: Iot and GSM based sprinkler irrigtion system monitoring and controlling

 Students: Kiran Hebbar,Keshava Prasad,nithin,Subhramanya

Guide: Mr.Suhandas

Abstract:

Sprinkler irrigation is a method used for irrigating areacanut field. This irrigation system consists of water pump along with its required electrical components and a water routing pipe. Suppose if the farmer has the land located far from house, then it will become difficult to regularly monitor and control the electrical system. So, in order to overcome these problems an IoT GSM based sprinkler irrigation monitoring and controlling system is designed which allows the farmer to monitor and control using an android phone.

11. **Project title** Animatronic Hand

Students: Jithesh Jain,Akshay Shetty,Akhil,Pavan Satyanarayana Bhat

Guide: Mrs. Jovita Lasrado

Abstract:

The Animatronic hand is a robotic hand that is designed using a flex sensor. The proposed idea of designing the animatronic hand is to change a perception of remote controls for actuating manually operated robotic arm. The robotic hand is very useful for paralysis and handicapped person as well as in various medical field. animatronic hand based on wireless technology using NRF24L01, Arduino UNO board, servo motor, flex sensor.

12. **Project title**: An Embedded system for plant leaf disease detection and prevention

 Students: Apporva H,Jagannath,Kathik K,Suresh

Guide: Mr. Vinay P

Abstract:

An embedded system for the plant leaf disease detection and prevention is a system that is designed to detect the disease that is affected to the plant leaf and suggest a suitable pesticide for that leaf disease. Automatic detection of plant leaf disease can be done using digital image processing techniques and neural network. Image processing technique is used to classify diseases and quickly diagnosis can be carried out as per diseases. This approach will enhance the productivity of crops in the field of agriculture.

13. **Project title**:   Automated waste seggregation and monitoring system

Students: Shainitha U.M,Saniya Taj,Shylesh Kumar G.Y,ShashwathN J

Guide: Mr.Gurusandesh

Abstract:

Solid waste management is one of major aspect which has to be considered in terms of making urban area environment healthier. The common dustbins placed by the municipal corporation are leading no. of health, environmental and social issues. Various causes are there like improper dustbin 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. A automatic solid waste management system is designed that will check status and give alert of dustbin fullness and more significantly system has a feature to literate people to use dustbin properly. Thus presented solution achieves smart solid waste management satisfying goal of making Indian cities clean, healthy and hygienic.

14. **Project title**:   Smart Helmet

Students: Preethi K,Thejaswini Kini,Suraksha,Sujith B

Guide: Mr. Shivaprasad

Abstract:

Today's younger generation have great enthusiasm for bikes. This great passion for riding bikes without safety elements is the leading cause for accidents. A smart helmet is a special idea which makes motorcy cle driving safer than before. The main aim of the smart helmet is to prevent the biker from starting his bike until and unless he actually wears the helmet and to make sure that the driver is not drunk. It incorporates the concepts of GSM and GPS to track a location of the accident and to provide the victim prompt medical attention and using alcohol sensor we detect if the rider is drunk or sober to avoid drink and drive. The project also carries the concept of a pressure sensor which senses the hit of the bike above a permissible limit and informs the family and friends of the biker about the accident by the concepts of GSM and GPS.

15. **Project title**: Keyless entry system and auto control of power windows in car using bluetooth

 Students: Shilpa D Rai,Shwetha B.S.,Pooja,Vidyalakshmi P

Guide: Mr. Shrikanth Rao

Abstract:

This is a novel method of locking and unlocking the door of a car using Bluetooth connected mobile. Bluetooth based keyless entry system and Auto control of power windows includes Arduino - Nano and Bluetooth module HC-05. The embedded C is used to program the Arduino – Nano. By monitoring the distance between the car and car owner/driver the central locking of car and power window will get automatically locked / unlocked as per the given instructions. If the distance between the car and car owner/driver is more than 10mtr, the Bluetooth connectivity of a car and the car owner gets disconnected and the car gets automatically centrally locked and window will be automatically closed. A keyless entry system is reliable and convenient for user.

As smartphones have recently become one of the most popular devices worldwide, various convenient applications are being released. Now smartphones not only provide the ordinary internal processes such as dialing or receiving phone calls, sending text messages, and doing mobile banking wherever we are, but they also are beginning to control various other devices thatare part of our lives. Through the smartphone using mobile applications, we can remotely control a variety of external devices such as TVs, projectors for presentations, computers, and even cars. The design and of a lock system using Bluetooth is implemented. The lock system can be controlled remotely by a dedicated Android application. The main function of the Android smartphone is equipped with Bluetooth so that a lock can be opened and managed via the application functions. The users lock information in real time can be stored and managed in the database via a server that a server manager builds and manages. Using this system, users can do a variety of management functions such as closing and opening of a power window, locking and unlocking the central lock.

16. **Project title**:   Solar Photovoltaic water pumping system

 Students: Sathvika,Shybha Shetty S,Vilas,Ullas

Guide: Mr. Yadunandan

Abstract:

The renewable energy sources (RESs) play a vital role in reducing the consumption of conventional energy sources and its environmental impacts for water pumping applications. A solar powered water pumping system is made up of two basic components. They are PV panels and pumps. The smallest element of a PV panel is the solar cell. Each solar cell has two or more specially prepared layers of semiconductor material that produce Direct Current (DC) electricity when exposed to light. This DC is collected by the wiring in the panel. It is then supplied either to a DC pump, which in turn pumps water whenever the sun shines or stored in batteries for later use by the pump.

The application of photovoltaic electromechanical systems for water pumping has increased in remote areas of developing countries due to the reduction of panel cost. It proposes the sensor less control algorithm for a three phase BLDC motor. The proposed algorithm includes the estimation of speed and angle of the motor using ZCP algorithm.

17. **Project title**:   Implementation of ALU using vedic mathematics

Students: Varsha N.A.,Varsha H Shetty,Pradyumna Sharma M.K.,Venkatesh Krishna Bhat

Guide: Mrs. Aparna Nair

Abstract:

Arithmetic and Logic Unit (ALU) is the most crucial and core component of central processing unit as well as of number of embedded systems and microprocessors. ALU consists of many computational units like adders, multipliers, logical units etc. In the proposed methodology, the operations being implemented are addition, subtraction, multiplication, division and logic unit. Vedic mathematics concepts are proposed here for designing the computational units of a 32-bit ALU. The adder being used here is carry select adder. Two's complement method is used for subtraction. A high-speed 32-bit multiplier is proposed which is based on the Vedic mathematics technique. The technique used is Urdhva-Tiryaghbhyam which means vertically-crosswise. A divider based on Vedic mathematics is also proposed. The technique used for division is Parvartya Sutra. In the proposed method, a 32-bit number is divided using 16-bit number. The proposed Vedic mathematics based ALU is designed using high level hardware description language – Verilog. The efficiency of proposed system is analyzed by comparing its speed, area and power constraints with the conventional methods that are being used. The Cadence tool is used for the simulation and synthesis of the design. The proposed ALU is dumped into the Spartan 3e FPGA using the Xilinx tool. The proposed ALU is found to be more efficient in terms of area, time and delay.

18. **Project title**: Solar Aqua Purifier and its water Quality management

 Students: Yasha,Ravi Bhat B,Shrijith P.S.

Guide:Mrs.Rajani Rai B

Abstract:

The scarcity of clean drinking water is a problem that exists in many areas of the world today. Approximately, Billions of people suffer each day from insufficient quantity of clean, drinkable water. Most of the current technologies available to combat this problem are expensive and consume too much power to be effective in rural regions of the planet. The solutions that do not consume an excess of power generally require expensive and time consuming filter maintenance. The use of chemical processing mechanisms of purification is an affordable solution, but it has been known to be hazardous if used improperly. With the idea of low cost and sustainability in mind, a water filtration system that will take advantage of natural energy in order to power a water purification system is designed. Water will enter the system, where it will flow through a reverse osmosis system and then processed by a UV purifier. By using the reverse osmosis and UV lamp is used purification techniques, the water with a total concentration of less than 0.01%

bacteria. Water will enter the system by using a pump to pull it through the system. The photovoltaic technology is used to transform sun rays into electric potential that will be stored in a battery backup system. This battery system will power the ultraviolet purification process of the system.

19. **Project title**:   Design of Area Efficient Multiple Output High voltage level translator

 Students: Swajan,Shridhara B.P.,Raghavendra V,Pooja R

Guide: Mr.Vinay P

Abstract:

The growing market for IoT (Internet of things) has pushed the requirement of embedded non-volatile memories with the low amount of memory requirement. In embedded systems the circuit board has number of different circuits and they work in different voltage ranges. To make possible intercommunication between two or more circuit blocks working in different voltage ranges, Voltage level translators are used. This project is designed using cadence 45nm tool and concentrated on reducing the circuit area of the multiple outputs, high voltage level translator circuit. Also, power consumption management is achieved.

20. **Project title**: Arecanut quality Seggregator

   Students: Pratheek M Holla,Sandesh Ramesh Naik,Yashwith Kumar K.V.,Sourab M

   Guide: Mr. Naveena C

   Abstract:

The food quality is very essential to the farmers as well as the end users. As we all know arecanuts are the commercial commodities that gain foreign revenue in India. The classification is presently performed manually which is less efficient, low speed, expensive and tedious work. For this purpose we need to automate the classification which will lead to less production cost and improves the quality of food. The classification is based on color, texture, shape and size of the areca nuts. Varieties of the arecanuts had been collected to classify as the samples for the project.

21. **Project title**: Semi Automated Restaurant system

 Students: Sampath Shenoy,Sukeesh Raj K.,Shetty Deeksha,Sushmitha S.M.

Guide: Mr. Udaya Kumar

Abstract:

Nowadays people are looking forward for a system that will satisfy their needs more comprehensibly. Most of the restaurants industries are looking for any application that enhances the dining experience as well as that increase the profit. In traditional ordering system the waiter notes down the order from the customer then places the order to the kitchen which consumes time and may cause errors. This project aims to automate the food ordering process in restaurant as well as to improve the dining experience of customers.

In this proposal of the semi-automated restaurant system the paper-based menu is replaced by a user LCD menu and the system has Arduino microcontroller which is interfaced with the input and output modules. The input module takes the input from the user and displays the menu items on LCD. At the receiving end the selected items will be displayed on the LCD and by using the conveyer belt the received order will send to the particular table.

22. Project title: Solar Panel with sun tracking using IoT

Students: Amrutha B.B.,Meghana H.S.,Varsha K.P.,Roshan Bhaskar Naik

Guide: Mrs. Nirupama K

Abstract:

Solar energy is a very important means of renewable energy resource. With solar tracking, it is possible to generate more energy since the solar panel can maintain a perpendicular profile to the rays of the sun. Even though the initial cost of setting up the tracking system is considerably high, there are cheaper options that have been proposed over time. This project discusses the design and construction of a prototype for solar tracking system that has a dual axis of freedom. Light Dependent Resistors (LDRs) are used for sunlight detection.

The control circuit is based on an ATMega328P microcontroller. It was programmed to detect sunlight via the LDRs before actuating the servo to position the solar panel. The solar panel is positioned where it is able to receive maximum light. As compared to other motors, the servo motors are able to maintain their torque at high speed. They are also more efficient withefficiencies in the range of 80-90%. Servos can supply roughly twice their rated torque for short periods. They are also quiet and do not vibrate or suffer resonance issues. Performance and characteristics of solar panels are analyzed experimentally. There are types of solar cells with relatively higher efficiencies but they tend to be very costly. One of the ways to increase the efficiency of solar panels while reducing costs is to use tracking. Through tracking, there will be increased exposure of the panel to the sun, making it haveincreased power output. The trackers can either be dual or single axis trackers. Dual trackers are more efficient because they track sunlight from both axes. A single tracking system was used. It is cheaper, less complex and still achieves the required efficiency. In terms of costs and whether or not the system is supposed to be implemented by those that use solar panels, the system is viable. The increase in power is considerable and therefore worth the small increase in cost. Maintenance costs are not likely to be high.

23. Project title: Brain Task classification

Students: Supritha H.D.,Rashmi R.,Pruthvishaila,Anusha J

Guide: Mrs.Rajani Rai B.

Abstract:

Electroencephalography is an electrophysiological monitoring method to record electrical activity of the brain. EEG is most often used to diagnose epilepsy, which causes abnormalities in EEG readings. In brain task classification, feature extraction of EEG (Electroencephalogram) signals is done. It is based on the wavelet packet decomposition (WPD) method. For a given EEG data wavelet packet coefficients are directly obtained using wavelet packet decomposition method. The energy, mean, standard deviation and highest magnitude of wavelet packet decomposition coefficients of different EEG sub bands are selected as features for the feature extraction. All these features are given to the classifier. In this proposed method KNN classifier is used for EEG signal classification. The performance is evaluated by WPD and KNN using Bonn university EEG dataset.

24. Project title: Smart control of traffic signalling system

  Students: Anusha B.S.,Nivedita Kallimani,Keerthan C.S

Guide: Ms.Sangeetha

Abstract:

The accretion of traffic has led to the use of more sophisticated Traffic management system in today's society. Traffic Congestion is a major factor which forestalls the smooth flow of Ambulance vehicles. To abate the inconvenience caused by the traffic, the Traffic Light Controller (TLC) is used which minimizes the waiting time of vehicle and also manages traffic load. RFID based systems play a crucial role in solving the problems caused by traffic. The project is a replica of a four-way lane crossing of real time scenario. In the first part, concentrated on problems faced by Ambulances, RFID concept is used to make the Ambulance's lane Green and thus provides a free way without interrupting the Ambulance. In the second part, concentrated on problems faced by Priority vehicles, IR sensors are used to actuate the timers accordingly and thus preventing traffic congestion. In the third part, concentrated on Traffic density control, IR transmitter and receiver are used to provide dynamic traffic control and thus increasing the duration of the Green light of the lane in which traffic density is high and hence, regulating traffic