## Best Five Projects 2017-18 (Shift-I)

1. **Project Title:** IOT Based Digital Colour Control for Multicolour LED Illumination System

**Abstract:** With an RGB LED it is possible to glow any colour you wish. A single LED die can only emit monochromatic light which could be one of the three primary colours-Red, Green & Blue. To produce more colours three LED dies need to be used together for RGB colour mixing. Commonly seven colours can be produced by controlling the switch of channel for each primary colour. To produce more than seven colours each colour channel should be able to change its brightness and not just switch ON/OFF. In this project this concept of PWM is being used to produce number of various colours on the RGB LED strip. The other supportive elements of this Multicolour LED Illumination System include-Android Application for the purpose of colour sensing, a controller for producing the PWM & the NodeMCU Module acting as a receiver.**ThingSpeak** an open source Internet of Things (IoT) application is used to store and retrieve data from things using the HTTP protocol over the Internet or via a Local Area Network.

**Domain/Area of Project**: Embedded System.

**Sponsored By:** Solar Electronics, Solapur

2. **Project Title :** Raspberry Pi Based Reader for Blind

**Abstract:** Text-to-speech (TTS) is the generation of synthesized speech from text. Our goal is to make synthesized speech as intelligible, natural and pleasant to listen, as human speech. Speech is the primary means of communication between people. During synthesis very small segments of recorded human speech are concatenated together to produce the synthesized speech. The quality of a speech synthesizer is judged by its similarity to the human voice and by its ability to be understood. A text-to-speech synthesizer allows people with visual impairments and reading disabilities to listen to written works on a home computer. Many computer operating systems have included speech synthesizers since the early 1990s. Recent progress in speech synthesis has produced synthesizers with very high intelligibility but the sound quality and naturalness still remain a major problem. However, the quality of present products has reached an adequate level for several applications, such as multimedia and telecommunications.

**Domain/Area of Project**: Embedded System.

**Sponsored By:** R.M. Irabatti, Solapur

3. **Project Title:** Medical Medicine Place Finder and Auto Inventory Management System.

**Abstract:** The purpose of this project is finding medicine place and inventory management of different medicine. Medicine updating form is created using visual basic software. The proposed system uses microcontroller for automatic opening of drawer and to store database using Microsoft access. The microcontroller is programmed in such a way that it will receive data from computer and indicate appropriate drawer where medicine is placed. The output of medicine place is fed to the microcontroller accordingly data coming from computer and particular drawer number is displayed on LCD. In addition, our project is to find the place of the required medicine by automatic opening that drawer. For this we have prepared database providing information about medicine with its rack address by using visual basic software. Relay drive circuit is interfaced with central microcontroller for drawer system. Serial communication port is used for communication between microcontroller and computer. Also facility of updating information about medicine i.e. entry or removal of medicine can be made easily.

**Domain/Area of Project**: Embedded System.

**Sponsored By:** Dr. Karvekar Hospital & Fertility Clinic, Solapur.

4. **Project Title:** PLC based Manless Railway Crossing Automation & Control System.

**Abstract:** The main aim of our project is to design a system to protect pedestrians and vehicles from colliding with trains which pass at regular intervals as India has the busiest railway network. Our project comprises of PLC which makes the whole system work automatically. We have used two IR sensor; one to detect the arrival and other to detect the departure of train. When train arrives in a particular direction IR Sensor1 Senses it's arrival and signal is sent to PLC to activate the DC Motor to rotate it so as to close the gate and prevent vehicles from passing. While the gate is closing the buzzer rings and Red LED glows up to inform people to stop. Once the train passes and it's departure is sensed by IR Sensor2, the sensor sends signal to PLC which in turn rotates the DC Motor in opposite direction so as to open the gate and allow vehicles to pass by giving indication through Green LED. Thus by implementing our project we can automate the entire process of opening and closing of gate, which in turn reduces the accidents and hence lives of people are saved.

**Domain/Area of Project**: Embedded System

**Sponsored By:** Achintya Technologies, Solapur.

5. **Project Title:** Automatic Number Plate Recognition

**Abstract:** For the several respective regular administrative tasks the license number plate is used by various government offices; for purposes like tracking of number plates by the traffic police in case of violation of any traffic rule by a particular vehicle, for the analysis of theft cars, for collection of toll and management of parking of vehicles etc. Unique numbers are assigned to all the motorized vehicles in India. These numbers are designated to the vehicles by district-level Regional Transport Office (RTO). Some of the functions of Automatic Number Plate Recognition in traffic monitoring system are – controlling of traffic volume, generating tickets for vehicles with no human control, vehicle tracking, vehicle policing, vehicle security and so on. The system presents the algorithms for localization of license plates using morphological operations, character segmentation using histogram and intensity projections and Optical Character Recognition (OCR) using Template matching. It has covered the various other approaches of implementation and proposed improvements in the used algorithm which can further improve the entire efficiency and accuracy. There is also a feature for number plate validation using excel database to control a real time gate/buzzer with LCD display and notification on email for invalid vehicles.

**Domain/Area of Project**: Embedded System

**Sponsored By:** Webtech Multi Services & Consultancy, Solapur.

**Best Five Projects 2017-18 (Shift-II)**

1. **Project Title:** Braille System for Blind People Using GSM.

**Abstract:** In this project, we are developing a new methodology in Braille system in order to read messages for Blind people. Here we are using GSM modem to receive messages and the content/letters of the message can be read by blind people easily just by feeling the vibration of vibrators using in the project and the same will be displayed on LCD as well. Alert vibrator is working as message alerter and Buzzer is for hearing alert. The basic grid of a Braille alphabet character consists of six vibrators, positioned like the figure six on a die, in two parallel vertical lines of three dots each. From the six vibrators that make up the basic grid, 64 different signs can be created. Reading direction of Braille is the same as for regular type and the rules for hyphenation that apply for regular fonts also apply in Braille In un-contracted by its own Braille characters.

**Domain/Area of Project:** Embedded System.

2. **Project Title:** Innovative Peripheral Interfacing System and Peripheral Learning Platform for Embedded System Software Approach.

**Abstract:** Most of the embedded system application development requires through understanding of the different commonly used peripherals, which are interfaced with some processor, hence there should be advanced and user-friendly learning platform available, which can help to improve effectiveness in the system development process. The Peripheral interfacing boards can be directly connected to the embedded system development board irrespective of type of microcontroller used in it. Also the project will try to provide the debugging solution using software approach for the commonly used peripherals. Peripherals, which are commonly used and repeatedly require for development of embedded system are pointed out and in this project, we developed different effective learning tools and software debugging solutions in the form of sources collection, simulations, animations and audio video tutorials.

**Domain/Area of Project:** Embedded System.

3. **Project Title:** Password Based Circuit Breaker

**Abstract:** A circuit breaker is an electrical switch designed to protect a lineman from electric shock or short circuit. It is found that fetal electrical accidents to the line man are increased during the electrical line repaire due to the lack of communication and co-ordination between the maintenance staff and electrical substation staff. In order to avoid such accidents, the breaker can be so designed such that only authorized person can operate it with a password. There is also a provision to change the password. The password can be changed any time unlike a fixed one burned permanently on to the microcontroller. A keypad is used to enter the password and a relay to open or close circuit breaker which is indicated by lamp/LED panels.Any wrong attempt to open the breaker will be displayed on a LCD panel. As the password is only known to the line man he can repaire the line more safely. This ensures security of the worker because no one can turn ON the line without his permission.

**Domain/Area of Project:** Power Electronics.

4. **Project Title:** Laser Virtual Keyboard.

**Abstract:** Today's QWERTY Keyboard has large size and can hardly be modified. As the size of desktops and laptops is decreasing day by day, the traditional keyboard acts as an obstacle in the path of the further minimization. Virtual Keyboard having a compact size may be an appropriate solution to the drawbacks with the traditional keyboard. The main aim of the project is to create a Virtual Keyboard with minimum hardware, easy to use and configure options for future improvements too. This project projects the LASER light on the flat surface, that light produced is the LASER keyboard. It creates detectable surface on which user don't need to press the key like normal keyboard, we just need to touch the respective keys and device detects those keys. This is very advanced technology that gives the new definition to the keyboard. This keyboard don't have the disadvantage of button mal function, we can type with any speed even best for the gaming. This technology allows the user to have full keyboard for their mobiles devices or wearable computer.

**Domain/Area of Project:** Embedded System.

5. **Project Title:** Leaf Disease Detection using Image Processing

**Abstract:** Image processing has been proved to be an effective tool for analysis in various fields and applications. In Agriculture sector the parameters like quantity and quality of product are the important measures from the farmers' point of view. The correct and timely identification of diseases in crops is the basis for integrated management of a farm. Generally, the disease features of any leaf are subjectively extracted by manual inspection. Automatic leaf disease identification by machine inspection can be of great benefit to those users who have little or no information about the crop they are growing. Such users include farmers, gardeners, homemakers who cannot afford the services of an expert agronomist. The various methods and techniques involved in the field of image processing to detect diseases in various types of leafs. The possible improvements in each of the research work has been identified and specified at the end.

**Domain/Area of Project:** Image Processing

**Sponsored By:** Encure IT Systems Pvt. Ltd., Pune.