

## **Best Five Projects 2014-15 (Shift-I)**

### **1. Project Title:** Blind Navigation with Audio Guidance and GPS system

**Abstract:** Currently most blind people rely on other people, dogs and their canes to find their way in buildings. This can be a handle for both the visually impaired person as well as others. Many disabled people refers to do things independently rather than rely on others .The Blind Navigation wit Audio Guidance system can provide a solution to these problems

The Blind Audio Guidance System would allow navigation outside of buildings .The main goal of the project is to provide a cost effective way to allow buildings to support blind people. The system hopes to provide a portable unit that can easily be carried and operated by a visually impaired user. It could easily be incorporated into a walking cane .This system would give the visually impaired an opportunity to integrate with society more easily .These people would have a greater sense of independence

**Domain/Area of the project:** Embedded systems

**Sponsored By:** Rajiv Gandhi Memorial School for the Blind, Solapur

### **2. Project Title:** Solar Water Purifier & Heater based on Solar Photo Voltaic + Photo Thermal Hybrid System for Electricity Generation

**Abstract:**The purification of water supplies is extremely important due to water scarcity. The model is designed which converts the dirty or saline water into pure/portable water using the renewable source of energy that is solar energy. Water purification technique used is Reverse Osmosis. Reverse Osmosis (RO) is a water purification technology that uses a semi permeable membrane. In reverse osmosis, an applied pressure is used to overcome osmotic pressure. Also water heating is provided with the help of evacuated glass tube collector and water tank is placed on ground level to provide maintains. The water is tested and results are much better as compared to normal purifier. The pH value reduced to 7.13 and hardness is reduced. The test results are very good, the amount of germs, dust and unwanted particles are removed. Thus our project is useful for different types of water, so this type of solar based water heater and purifier is helpful.

**Domain/Area of the project:** Energy Harvesting

**Sponsored By:** Solar Electronics, Solapur

### **3. Project Title: Biometric Control of Electronic Devices Using PSOC-5**

**Abstract:** Monitoring of body signals to control any electronic device or robot helps to improve medical care and in saving lives. Presently we can approach this field in two different angles which are INTERFACES and PROSTHETICS. Interfaces are devices to study brain signals while in Prosthetics we can connect any mechanical part to human brain and have it function as a normal organ such as Bionic Limbs, Bionic ears, Bionic eyes, Bionic senses, Bionic organs and Bionic tissue. Electronic devices can be controlled using the voltages present in human body and also by brain signals. Presently, Bionic ear, Bionic vision, Neurobionics are the technologies related to this field. Proposed project presents design and implementation of such a controlling electronic system for various purposes employing PSOC-5(ARM Cortex M3) processor module. It includes biomedical electrodes (sensors) to capture body voltages. The front end application at the monitoring system is developed using visual basic software in Personal Computers. It can display a waveform of human body voltage captured by biomedical electrodes. After receiving voltages various application are run with the use of body voltages.

**Domain/Area of the project:** Biomedical Engineering

### **4. Project Title: Embedded Web Server Security System using Raspberry Pi.**

**Abstract:** An Embedded network image capture and SMS altering system has been introduced in this project. It provides remote monitoring facilities and some characteristic properties are illustrated to be useful in the applications. So to implement all these devices with single and standalone system we choose Raspberry Pi which will acts as an server and then PIR sensor is interfaced which will detect a person even in the dark or no light condition, then camera will be switched on and then message will be transferred to corresponding person so that person can watch who is there or what camera is capturing by providing IP address of Raspberry Pi in browser. Through this we can have an image footage as well as quick action security system.

**Domain/Area of the project:** Security System/ Embedded System

## **5. Project Title: Solar Based Automatic Irrigation System**

**Abstract:** Solar power plant watering system is a project that functions as an automatic plant watering system that uses solar energy rather than power supply. It was invented after analyzing the normal process of watering plant is not effective & cause difficulty, time consuming & water inefficiency. This project is attempted to overcome all problem. It consists of solar charging system, soil moisture level detector. Solar panel will convert solar energy to electrical which will store in rechargeable battery to provide power supply to whole system. Soil moisture detector is a circuit that controls watering process base from soil moisture level. It will connect to a water reservoir which will provide clean water using pump. The water reservoir will deliver water as per the need. In manual mode water is delivered to the field as per the message sent by farmer.

**Domain/Area of the project:** Green Energy

**Sponsored By:** Vishwakarma Electrical Industry, Jalna

## **Best Five Projects 2014-15 (Shift-II)**

### **1. Project Title: Quadcopter**

**Abstract:** This project presents a novel approach towards designing and development of quadcopter. A quadcopter, also called a quadrotor helicopter or quadrotor, is a multirotor helicopter that is lifted and propelled by four rotors. Quadcopters are classified as rotorcraft as opposed to fixed wing aircraft because their lift is generated by a set of rotors unlike most helicopters. More recently quadcopter designs have become popular in unmanned aerial vehicle (UAV) research. These vehicles use an electronic control system and electronic sensors to stabilize the aircraft. With their small size and manless requirement, these quadcopters can be flown indoors as well as outdoor. Due to their ease of both construction and control, quadcopter aircraft are frequently used as amateur model aircraft projects. A prototype system was built and tested. The results were very positive and encouraging.

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

**Sponsored By:** Shruti Engineers, Solapur.

### **2. Project Title: Hand Gesture Based Wheel Chair Using GSM & panic key**

**Abstract:** Technology is showing its impact in various fields such as security, health, military, consumer level, etc. In addition, economic sector has been improved. Day by day technology is growing fast. Different technologies are making our life more luxuries. This technology can be helpful in making the living of handicapped people easy. Our aim is to develop a system which will be helpful for the handicapped people to drive their wheelchair through their Gesture .We propose a gesture based wheelchair for the benefit of physically challenged and elderly to navigate inside house without much effort. There are large numbers of people in the world with debilitating physical disabilities for performing even very basic tasks such as locomotion, speaking, writing etc. The worst affected class of physically challenged are those who have become paralyzed over a significant percentage of their bodies, i.e. quadriplegics. These people find it extremely difficult to perform any task that requires even small amount of force. We use PIC microcontroller, 3 axis accelerometer, switching IC, RF module, GSM, DC motors, panic key, MAX 232. The system is divided into two main units: Handheld unit and wheelchair unit. The sensor, which is connected to hand, is an 3-axis accelerometer with digital output (I2C) that provides hand gesture detection, and gives it to the PIC controller. The wheelchair control unit is a wireless unit that is developed using other controller.

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

**Sponsored By:** Suyash Nursing Home, Solapur.

### **3. Project Title:** Kiosk for Bus System

**Abstract:** This project will be the Boon for the new people visiting in the area. This system will be perfectly guiding them to reach their destination they desired, thereby reducing the disadvantage of the visitors by the local people in that area. This system will be able to provide the information of all the available buses on the route depending on the source and destination provided by the user. The information will be including details such as Intermediate stops on the route of the buses. Ticket fair will also be displayed between the selected stops. Provision for issuing the E-ticket if the customer demands for the ticket.

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

**Sponsored By:** Axis Technologies, Pune.

### **4. Project Title:** Multipurpose Blind Stick.

**Abstract:** The basic idea of the project is purposed to serve and help the blind people. So the project will be very useful for the home users as well as the Schools for the blind. The program has been designed to be usable for blind person, without the need of any special knowledge about system. This is the world of wireless technology. Number of systems and applications using wired data transfer are now replaced by wireless communication media. The stick will consist of micro controller, SPI memory, Audio Amplifier, GPS module used for receiving latitude & longitude of current location, The panic key used to send messages to particular user, Ultrasonic sensor used for obstacle finding, 16 X 2 LCD, Speaker. Talking gadgets often are marketed to those who suffer from visual impairments or blindness, but they also can be used for industrial applications. This system is a device that measures and announces direction, detects obstacle and warns user by announcement.

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

**Sponsored By :** NXG Embedded, Pune.

## **5. Project: Automatic Water Irrigation System**

**Abstract:** The main area of application of Automation in agriculture is at the harvesting. We propose wireless mobile parameter- sensing. The sensors will sense different parameters and also will provide the immediate action if necessary. The whole system will be controlled by the user mobile. Depending on the command provided by the user the system will act accordingly. The sensed parameters at the agricultural field will be sent to the server where we can monitor the condition of the crop. The whole system will work on wireless technology. In present days, in the field of agriculture farmers are facing major problems in watering their crops. It's because they don't have proper idea about the availability of the power. Even if it is available, they need to pump water and wait until the field is properly watered, which compels them to stop doing other activities – which are also important for them, and thus they loss their precious time and efforts. But, there is a solution – an automatic plant irrigation system not only helps farmers but also others for watering their gardens as well. This automatic irrigation system senses the moisture content of the soil and automatically switches the pump when the power is on. A proper usage of irrigation system is very important because the main reason is the shortage of land reserved water due to lack of rain, unplanned use of water as a result large amounts of water goes waste. For this reason, we use this automatic plant watering system, and this system is very useful in all climatic conditions.

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

**Sponsored By:** Choundikar Agro, Sangli.