Best Five Project from Shift (I)

1. Project Title: Mindwave Controlled Snake Robot.

Abstract: The principle was to design a snake robot that can provide the locomotion as the real biological snake, and controlled by mindwave. The shape and sizes of the snake robot is depend on its own application, different application may required different sizes and shapes, since this project mainly target to design a snake robot to give direction such as forward, backward, so the snake robot is designed to a moderate size with 8 segments.In order to have multiple degrees of freedom, the snake robot was built of multiple joints. Mindwave is a type of headset which uses brain waves to instruct the snake robot. The brain waves are captured with the enclosed EEG headset, which allows us to control the snake movement. Also there are many more applications of Mindwave mobile as in the case of handicapped persons to have control on various objects

Domain/Area of Project: Robotics.

Sponsored By: Vedam Labs, Solapur.

2. Project Title: Multipurpose In-Pipe Robotic Vehicle

Abstract: The aim of this proposed system is to give an innovative concept to handle the bore well rescue operations without human intervention. Normal operation of child rescue is done by using big machines with large manpower involvement. It takes more time to rescue a child from the bore well.Wheeled leg Analysing is employed in this design to go inside the pipe. The legs are circumferentially and symmetrically spaced out 120 degree apart. The robot is made adaptive so that it can adjust its legs according to the pipeline dimensions. This structural design makes it possible to have the adaptation to the diameter of pipe and to have adjustable attractive force towards the walls of pipe.In this proposed system, the condition of trapped child is captured with wireless AV Camera and monitored on laptop. The whole system is controlled wirelessly using RF remote. The proposed system is intended to reduce the risk involved during the child rescue operation by Analysing the situation and also to provide an option for cleaning pipes.

Domain/Area of Project: Robotics

Sponsored By: Akkalkot Muncipal Council, Akkalkot.

3. Project Title: Textile Fabric defects detection & sorting using image processing

Abstract: Quality inspection is an important aspect of modern industrial manufacturing. In textile industryproduction, automate fabric inspection is important for maintain the fabric quality. For a long time the fabric defects inspection process is still carried out with human visual inspection, and thus, insufficient and costly. Therefore, automatic fabric defect inspection is required to reduce the cost and time waste caused bydefects. The development of fully automated web inspection system requires robust and efficient fabricdefect detection algorithms. The detection of local fabric defects is one of the most intriguing problems in computer vision. Texture analysis plays an important role in the automated visual inspection of textureimages to detect their defects. Various approaches for fabric defect detection have been proposed in past and the purpose of this paper is to categorize and describe these algorithms. This paper attempts to presentthe survey on fabric defect detection techniques, with a comprehensive list of references to some recent.

Domain/Area of Project: Image Processing

Sponsored By: Suryoday Weaving Mill, MIDC, Solapur.

4. Project Title: Futuristic Electronics Trolley for intelligent billing with amalgamation of RFID and ZIGBEE

Abstract: This trolley is required in supermarkets. In the existing, in the mall every person takes product put into trolley. After the shopping is done that person have to stand in the queue for billing. In the billing process a sell person scan barcode of each and every product and gives final bill. This process is very time consuming and it becomes worst on holidays, special offers or weekends.
To overcome that we have been developed a smart way for shopping in malls. Each and every product has RFID tag instead of barcode. The smart trolley will have RFID reader, LCD display. When a person put any product in the trolley it will scan and the cost, name and expire date of the product will display. Cost will add into final bill. Bill will be stored in microcontroller memory. It will transfer from RF transmitter to RF receiver. Receiver will transfer this information to the PC through serial communication. For this project we used Embedded C and VB6.0 software.

Domain/Area of Project: Embedded System

Sponsored By: Saikrupa Super Market Pvt. Ltd., Solapur.

5. Project Title: Prepaid Energy Meter using GSM

Abstract: Every month we can see a person standing in front of our house from water Board whose duty is to read the water meter and handover the bills (water) to the owner of that house. This is nothing but meter reading. According to that reading, we have to pay the bills. The main drawback of this system is that person has to go area by area and he has to read the meter of every house and handover the bills. The Electricity board and Water authority has to give privileges for these people to do their duty monthly. The thing is, Government will not appoint any particular persons for this duty. The people working in these boards will go on a particular day and do their duty leaving all their pending works. Due to this, their work will be delayed and this is great loss for government. To overcome this drawback we have come up with an idea and this idea will help the government and it will save the time of the employees working in these boards.
The aim of the project is to automate the prepaid billing of water meter. In this project the front end is User friendly and the employees can work on this software with minimum knowledge of Computers. Employees can read the meter by sitting in the Office. For front end designing Java is used.

Domain/Area of Project: Embedded System and Power Electronics

Best Five Project from (Shift-II)

1. Project Title: Interactive City Transport System with User Navigation Feature.

Abstract: This product was developed to monitor the number of seats occupied in a bus and transmit the same to the depot at every 5-minute interval. This project helps the depot to get the real time updates of seat positions in the bus using GSM technology. The booking agency can allot the seat matrix at the real time instead of manually allocation. The project also helps to provide alert notification for fire, unauthorized user, theft notifications to depot on real time basis. For this, we have used powerful combination of ARM7 processor, GSM Technology and sensor systems, which together form a highly efficient bus reservation system for bus depot. The other part of this project is to provide complete vehicle navigation information requested by user or any depot and provides regular updates to the next bus stand to display or announce the bus name on stands.

Domain/Area of Project: Embedded System

2. Project Title: RFID based Toll Tax Collection System

Abstract: Present toll-tax collection system is manual. With the help of this project, we are digitalizing the procedure of toll-tax collection. This is the way to reduce the traffic per lane by up to 300-400%. Reducing traffic up to this level at the highways and expressways is very crucial task. With the help of RFID based toll deduction system we make the transportation system more efficient and perfect. The vehicle will be equipped with a radio frequency (RF) tag, which will detect RF Reader located in on toll tax collection system. The amount will then automatically deduct from the balance in the card. And if there is not sufficient balance in the card then it can be recharged at the same collection system. Apart from this, the amount deducted and the available amount in the card will be sent to the registered number.

Domain/Area of Project: Embedded System

Sponsored By : R.K. Electronics Pvt. Ltd., Udaipur, Rajasthan.

3. Project Title: Mind controlled Skateboard

Abstract: Mind controlled Skateboard that uses brain waves which are captured with the enclosed EEG headset that indicates the meditation, attention and concentration level in the form of raw wave, brainwave frequency bands. Mind Wave can be used with supported video games, research software, or a number of the main working of the project is to design a functioning skate that will respond to a user's brain activity and react accordingly. Being used NeuroSky EEG headset to gather the necessary brain activity to drive the skate. To run our custom architecture we will be using an Arduino board for software and run a translation program to convert the EEG signals into a 6 bit format that will be able to be read by the custom PCB on the skate. The skate itself will house a custom PCB that will contain an Atmega 328 chip, motor driver, and Bluetooth communication between skate and the headset.

Domain/Area of Project: Embedded System

4. Project Title: Zigbee based wireless Voice to Text translator in Airlines/Hospital assistant system for Blind/ Illiterates

Abstract: Translation of voice is an important problem for blind and illiterate people. The object of this project is to introduce an efficient algorithm for conversion of voice to text. As the system is voice based it, makes operating the system easy even for blind and illiterates. The main aim of this project is to construct a user-friendly voice to text translator system, which finds its applications in Airlines, Hospitals etc. The language of translated text can be set as user requirement. But, mostly English is preferred as it has prominence of international language.

Domain/Area of Project: Embedded System

5. Project Title: SWARM ROBOT using Arduino

Abstract: Swarm robotics is a new approach to the coordination of multi robot systems, which consist of large numbers of mostly simple physical robots. It is supposed that a desired collective behaviour emerges from the interactions between the robots and interactions of robots with the environment. This approach emerged on the field of artificial swarm intelligence, as well as the biological studies of insects, ants and other fields in nature, where swarm behaviour occurs. Here we are trying to build a system in which three individual robots will co-ordinate to complete the task, which is hard to do by single robot. Communication between these robots is primary goal of the project. This Project is based on Grid Scale for detection of destination. Grid scale technique is based on co-ordinate system where our object is placed on the one of the co-ordinates in grid scale system. Swarm Robots will follow the co-ordinates to get the object location.

Domain/Area of Project: Robotics