**A Brief Study of Final Year Projects**

* **Position Control using Ultrasonic Levitation Assembly:**

The goal is a systematic method for designing implementable planar force fields for micro assembly based on part geometry. Although artificial potential fields are well-known,To our knowledge this is the first attempt to systematically design physical potential fields formanipulation

* **3-D Printer**

3D Printers are machines that produce physical 3D models from digital data by printing layer by layer. It can make physical models of objects either designed with a CAD program or scanned with a 3D Scanner. It is used in a variety of industries including jewellery, footwear, industrial design, architecture, engineering and construction, automotive, aerospace, dental and medical industries, education and consumer products.

* **Braille Touch pad for blind**

These touch screens can actually be better because they're customizable. They can accommodate users whose fingers are small or large, those who type with finger close together or far apart, even to allow a user to type on a tablet hanging around the neck with hands opposed as if playing a clarinet."

* **Automated Resistance Measurement and Segregation**

The first step of aggregate detection, therefore, was to use this dichotomy of concrete colour to segment the grey image to yield a binary image in which aggregates appear as white objects and concrete cement appears as the black background. The bifurcation of the cut concrete surface colour greatly simplified the image processing procedure and time, and it was methodologically achieved by establishing a histogram of grey colourIntensity levels in the image and then thresholding the image at a particular intensity level by analyzing the histogram.

* **Object Tracking and Trajectory Predications**

Object tracking is one of key tasks which are required in a number of applications of WSN. In this paper we propose an efficient prediction-based object tracking scheme employing the face network topology. The proposed scheme uses the trajectory of the object and enhanced least square method to predict the path. Computer simulation reveals that the proposed scheme improves the tracking accuracy and energy efficiency compared to the existing prediction-based scheme. The improvement gets more significant as the moving speed of the object becomes higher.

* **Wireless Pupil Controlled PC Mouse**

The “Eye-Controlled Interaction” system (EYCIN) developed by researchers at the Fraunhofer Institute for Industrial Engineering IAO in Stuttgart in cooperation with industrial partners tracks the human user’s eye movement and transmits it to the mouse pointer on the monitor. A camera observes the movement of the pupils from a distance of up to one meter; a software program calculates and transfers the coordinates of the area viewed. It all happens so quickly that the mouse pointer moves smoothly.

* **3-D Interactive Fluidic Interface**

The version 11 graphical user interface (GUI) includes a new quality-checking feature that detects resolution issues on imported geometry defined by STL files. Users can load the results into the graphical display window in the Meshing & Geometry tab and perform interactive analyses.

* **Expert System based Control of an Inverted Pendulum**

A fuzzy controller for an inverted pendulum system is presented in two stages. These stages are: investigation of fuzzy control system modelling methods and solution of the “Inverted Pendulum Problem” by using Java programming with Applets for internet based control education. In the first stage, fuzzy modelling and fuzzy control system investigation, Java programming language, classes and multithreading were introduced. In the second stage specifically, simulation of the inverted pendulum problem was developed with Java Applets and the simulation results were given. Also some stability concepts are introduced.

* **Portable Solar Powered Health Monitoring System**

Power has become the main source to run this present world. Due to lack of resources production of electricity is falling drastically day by day. The objective of this project was to control the position of a solar panel in accordance with the motion of sun. Micro controller is used to control or regulate the position of solar panel according to the direction and movement of sun. In this process solar panel is used as sensor which absorbs the solar energy and converts solar energy to Direct Current (DC).

* **Standalone Stock Market Predications using Neural Network**

This study investigates the effectiveness of a hybrid approach based on the artificial neural networks (ANNs) for time series properties, such as the adaptive time delay neural networks (ATNNs) and the time delay neural networks (TDNNs), with the genetic algorithms (GAs) in detecting temporal patterns for stock market prediction tasks. Since ATNN and TDNN use time-delayed links of the network into a multi-layer feed-forward network, the topology of which grows by on layer at every time step, it has one more estimate of the number of time delays in addition to several control variables of the ANN design.

* **PC Based Oscilloscope**

Portable PCs are today common and a USB link is a better solution here we present an oscilloscope using USB port of the PC that operates at up to 10 kHz with ±16V input voltage. It has much more improved features than the PC-based oscilloscope. The oscilloscope uses IC PIC18F2550 from Microchip as the main controller, which makes the oscilloscope compact as there is no need of additional power supply for the entire circuit board.

* **ECG Signal Acquisition and processing**

Electrocardiogram (ECG) signal detecting, amplifying, anti-aliasing filtering circuits were designed and made to get the analog ECG signal, and then make it necessarily conditioned to meet the requirement of data acquisition card USB-6008( signal frequency: 0.05Hz ~ 159Hz, signal amplification: + 1000 times). Using the data acquisition card USB-6008 developed by NI Company for A/D conversion, digital form of ECG signal may be gotten, and it can be transmitted to a personal computer for further processing by LabVIEW2009 (evaluation version). We carried out multi-resolution analysis of the digital ECG signal and got ECG signal components in different sub bands.

* **Navigation Assist for Visually Impaired**

**Blind and visually impaired persons find it very difficult to move about in unknown environments. The white canes used by them are still the preferred tools for orientation. The project “A Mobility and Navigational Aid for Visually Impaired Persons” wants to help visually impaired persons to orient themselves in new environments by means of computer-aided vision.**

* **Automatic Guitar Tuner**

The theory behind the Automatic Guitar Tuner (AGT) is based in the relationship Between the guitar string tension and the corresponding frequency of the string.

* **Self balancing Car**

The project is aimed at making a two wheeled self balancing electric vehicle. A processor and electric motors in the base of the device keep the vehicle upright when powered on with balancing enabled. Users lean forward to go forward, lean back to go backward. Gyroscopic sensors are used to detect tilting of the device which indicates a departure from perfect balance.

* **Self Park Car**

The car will use 4 infrared sensors to provide “eyes”, which will feed data to an on-board FPGA that will control its motors, using a finite state machine, to safely guide the car from the moment a driver decides to park to the point when the car is in the correct position.

* **Digital Conductivity Analyser**

Thermal Conductivity Analyzer is designed to provide a highly sensitive and accurate analysis of a binary mixture of gases. The thermal conductivity analyzer can also be calibrated to measure a single component of a multi-component gas mixture.

* **Senseless Field oriented control of 3phase Induction motor**

This application report presents a solution to control an AC induction motor using the Control Law Accelerator (CLA) which is a small foot print coprocessor present on some of the microcontrollers from theC2000™ family of MCU. TMS320F2803x devices are part of the family of C2000 microcontrollers which enable cost-effective design of intelligent controllers for three phase motors by reducing the system components and increase efficiency.

* **Automatic Vehicle Accident Detection and Messaging using GPS and GSM modems**

The work is to find the vehicle accident location by means of sending a message using a system which is placed inside of vehicle system. The main purpose is to provide security to the vehicle in very reasonable cost. So in this work we are using the basic microcontroller AT89C52 for cost effective and also for easy understanding. Here we used assembly programming for better accuracy and GPS and GSM modules which helps to trace the vehicle anywhere on the globe.

* **Intelligent Helmet**

The project will be a miniature model of a real life car which will sense the availability of parking space and park itself automatically in the available parking area. The surrounding terrain details are continuously sensed by using a rotating distance measurement sensor which will sense the distances of the car from adjacent walls and the angle of car with respect to the surroundings. Using this continuous feedback we plan to accomplish both parallel as well as perpendicular parking schemes in our design.

* **Face detection and login system**

The face is one of the most characteristic parts of the human body and has been used by people for personal identification for centuries. In this thesis an automatic process for frontal face recognition from 2–dimensional images is presented based on principal component analysis. The goal is to use these concepts in eventual face–recognizing login software. The first step is detecting faces in images that are allowed a certain degree of clutter. This is achieved by skin colour detection in the HSV colour space.

**BE PROJECT REPORT**

Vehicle accident detection using GPS & GSM:

The B.E project display was conducted on 11th april 2015.It was organized by the faculty members of Electronics department. Projects were displayed by 24 groups from the final year batch and they were scrutinized and graded by graded by judges. Students, especially from the third year and second year also attended the project display to learn and maybe continue some ideas taken up by their seniors.

Overview of project:

The basic concept behind this project is to provide instantaneous emergency facilities for vehicle accidents. The high demand of automobiles has also increased the traffic hazards & the road accidents, life of people is under high risk due to lack of emergency facilities in our country. An automatic alarm device for vehicle accidents is introduced in this project. The design is such that it will detect accidents in significantly less time & send basic information to first aid center within a few seconds . It also includes a modification of object dimensions recognition which alerts the user about the obstacle present with the help of infrared sensors.

Implementation:

* Two IR sensors are placed on either side of the bonnet of the car. These two sensors will detect the obstacle that come its way. If the sensor to the left detects an obstacle, it will alert the user to take a right & vice-versa.
* An automatic alarm in the form of a buzzer is used to alert the user.
* If both the IR sensors detect & obstacle, the user is alerted that an unavoidable obstacle is present & the user needs to slow down or stop.
* Irrespective of this if an accident occurs then an alert message is sent automatically to the rescue team.
* GPS & GSM modules are used in this project to detect the location or site of accident
* The SIM 300 GSM controller is integrated with the TCP/IP protocol. Extended TCP/IP AT commands are developed for customers to use the TCP/IP protocol which is very useful for data transfer applications
* A GPS receiver ‘knows’ the location of the satellite because that information is included in the transmitted data.

Conclusion:

This concept can be futher used practically to help drivers avoid accidents or to provide immediate facilities to the victim. This application provides the optimum to poor emergency facilities provided to the road accidents in the most feasible way.