

ACADEMIC PROJECTS UNDERTAKEN

MICRO AERIAL VEHICLE - TRICOPTER

(Guide : Prof. K. P. Karunakaran, IIT Bombay) Jan '11

- Pursuing a project on the design of a remote controlled micro aerial vehicle, which is a copter that has 3 rotors
- The copter can balance itself through a gyroscope and accelerometer sensors
- It can be moved to a specific place either with the help of GUI software linked with the copter using Zig-bee modules or with a radio controlled remote
- There is a camera mounted on the copter which captures and transmits live video to the computer
- The techniques used are Kalman filter for gyroscope and accelerometer. PID controller for smooth navigation of the copter

INTERFACING WIRELESS MODULES USING MICROCONTROLLER

(Guide:THINKLABS) Jan '11-Feb '11

- Worked with ZIG-BEE , CC2500 , GSM , BLUETOOTH Modules
- Created a Microcontroller Interface for sending and receiving data using the above mentioned modules
- Made a Network Mesh using ZIG-BEE , CC2500 Modules.
- Used a GSM Module and interfaced it with a Microcontroller, It was made to display a message which was sent to it through another mobile, on an LCD display

MINI UNIQUE IDENTIFICATION FOR IIT BOMBAY

(Guide: Prof.D.B.Phatak, IITBombay)Oct2009-Nov2009

- Involved in developing software to assign a Unique Identity to every IIT Bombay student using fingerprint images stored in form of templates using C++ programming language
- Specifically worked for Registration of all the students and storing them into database

PROPELLER CLOCK

(Guide: WEL LAB) Jan'11-April'11

- Designed and implemented a **PROPELLER CLOCK** which works on principle of persistence of vision. It displays an analog clock using digital circuitry
- Implemented the complete project in **Verilog** code and verified using the online softwareIP Intention

RELEVANT COURSES UNDERTAKEN

- **Core Courses:** Electrical Machines and Power Electronics, Analog Circuits, Digital Circuits, Signals and Systems, Microprocessor, EM waves , Communication systems , Advanced computing for electrical engineers
- **Mathematics:** Calculus, Linear algebra, Differential equations, Complex analysis, probability and random process
- **Extra courses:** Mobile computing, Introduction to communication networks, Embedded Systems
- **Computer science and statistics:** Computer programming and utilization, Data analysis and interpretation
- **Humanities and Social Sciences:** Economics, Environmental Studies, psychology

TECHNICAL ACTIVITIES

ROBOKICK

- In this competition, a bot has to detect a particular colour ball and push it towards the goal
- The image is captured by an overhead camera which is then processed and sent to the bot
- Processed Matlab codes to detect the position of the ball from the image and guide the bot there

NEXUS

- Designed and developed a **Line Follower and Block Displacing bot** that follows a black grid on white chart by sensing the line and block through photo diodes and processing it through microcontrollers and IC's to move the machine.
- It calculates the least distance to the drop point after lifting the block

FM TRANSMITTER

- Designed an **FM Transmitter** which generated a frequency around 95 MHz and had a range up to 25 metres. The pulses on the microphone of the transmitter can be received on the mobile phone FM receiver

RC CONTROLLED F1 CAR

- Designed a Remote controlled F1 racing car which works on RC based circuit in my freshmen year as a part of the event held by The Technic Club of IIT Bombay

NUMBER PLATE RECOGNITION SYSTEM

- Extracted the license number from the image of a number plate using image processing techniques in Matlab

MICROCONTROLLERS :

- Worked on atmel atmega series (used WinAVR software for coding) , MSP 430 (used TI software code composer for coding) series and 8085 (used kile software for coding)

TECHNICAL AWARDS

- Awarded **Institute technical special mention** for contribution to technical activities
- **Hostel technical Colour**

SOFTWARE SKILLS

- Languages known: C, C++, Java and Html
- Hardware Description Language: Verilog
- Software skills: Adobe Photoshop, WinAVR, Nokia QT software, LT Spice, Matlab, MS office, Sony Vegas 9.0, Adobe Dreamweaver, Eagle.

POSITIONS OF RESPONSIBILITY

ELECTRONICS CLUB MANAGER — '11

- Manager of IIT Bombay's largest electronics hobby club
- Conducted Electronics club Summer Projects which was a huge success , 20 projects were successfully completed
- Part of 15 member team

HOSTEL TECHNICAL ACTIVITIES SECRETARY – '10-'11

- Managed all technical activities and encouraged students to involve in competitions in hostel
- Played a crucial role as a member of the Hostel Council and helped in planning hostel activities

EXTRA CURRICULAR ACTIVITIES

- Awarded hostel organisational special mention
- Worked as team to launch a new initiative in IITBombay through **NIF**(National Innovation Foundation) to develop village innovations by giving them as projects to students in IIT Bombay. Successfully floated the projects in the campus and also submitted the project reports to **NIF**
- Passionate in playing Lawn Tennis, Cricket
- Participated in the Inter Hostel TECH General Championship 2010
- Enthusiastic in playing Guitar