AREAS OF INTEREST

- Embedded System Design, VLSI Design, Analog Design

TECHNICAL SKILLS

- **Operating Systems**: Windows, Linux
- **Tools & Softwares:** MATLAB, Keil, MPLAB, Multisim, Xilinx-ISE, GHDL, Icarus-Verilog, NGSPICE, Protel, LabWindows/CVI
- **Programming Languages:** Assembly language for 8051, C, VHDL, Verilog
- **Microprocessors and Microcontrollers:** 8085, 8086, 8051, PIC, ARM

PROJECT TRAINING

Bhabha Atomic Research Centre

Project: Caliper Pipeline Inspection Gauge

The purpose of the project was to build several modules attached to each other like the compartments of a train, which could be inserted into the pipeline (length more than 100 km) at one end and travelled to the other end. The modules contained several geometric sensors, power module, and memory. During the course of its travel it must register all kinds of faults in the pipeline in its memory with every minute detail.

My Work:

- Developed VHDL modules of counters, PAL, and LATCH on XILINX. Integrated the modules into a single program for downloading it into an FPGA **[Dec – 2008]**
- Interfaced stepper motor to microcontroller 89C51 and developed the assembly language program for the same to study the working of strain gauge geometric sensor of CPIG **[Jul – 2009]**

ACADEMIC PROJECTS

Post Graduate Project: Movement and Posture Monitoring using Accelerometers and Gyroscopes

Guide: Prof. P. C. Pandey, EE Department, **IIT Bombay** **[May.2012-till date]**

This project aims at developing wireless modules which can be attached to different parts of a human body. These modules transmit data to a remote computer which processes the data to conclude the posture and movement of the individual and also alarm the emergency services in case of fall detection. The project is a good substitute to expensive monitoring devices such as cameras which are not portable.

Completed Work:

- Designed the circuit interfacing accelerometers and gyroscopes to microcontroller PIC24FJ64GB004
- Bluetooth and RS-232 is incorporated for serial communication
- PCB layout has been designed on PROTEL

Ongoing Work:

- Embedded C programming on MPLAB for the controller
- Development of GUI and signal processing algorithm
- Bluetooth networking in master slave configuration

Under Graduate Project: Embedded Web Server

Guide: Scientific Officer Satish Shetty, Control Instrumentation Division, **BARC** **[Jun.2009-May.2010]**

This project was to equip the hospitals with a technology by which doctors located at a remote location can perform the emergency operation through internet.

My Work:

- Complete hardware design that included interfacing stepper motor, dc motor, EEPROM, and Ethernet card to microcontroller 89C51

COURSE PROJECTS

- **Virtual Instrumentation in C** **[Guide: Prof. Soumyo Mukherji]**

  Topic: Real time ECG signal processing **[Nov-2011]**

  Designed a GUI on LabWindows that took real time ECG data, processed it to remove noise, and hence detect the type of abnormality present in the heart. Vector-Cardiograph was also plotted.

- **Electronic System Design** **[Guide: Prof. P. C. Pandey]**

  Topic: Electro-Oculogram Measurement **[Nov-2011]**

  An analog circuit was designed and implemented to extract the oculogram signal (order of 30μV) and detect the movement of eyes in either direction with an accuracy of 1 degree.

- **Embedded System Design** **[Guide: Prof. P. C. Pandey]**

  Topic: Controlling appliances at several places simultaneously **[Apr-2012]**

  Two modules were developed, each interfaced with relays to control appliances. The master module had TSOP sensor connected for receiving commands from a TV remote. Communication between modules was done over a single wire using FSK modulation.

- **VLSI Design Lab** **[Guide: Prof. D. K. Sharma]**

  Topic: Interrupt Controller of microprocessor 8085 **[Apr-2012]**

  Hardware and software interrupts were implemented using VHDL. Synchronisation, timing constraints, and handshaking with other internal modules of 8085 were taken care of.

  Topic: Data moving instructions decoder and ALU of microprocessor 8085 **[Apr-2012]**

  All data moving instructions and algorithmic and logical unit was implemented using Verilog. Handshaking with Bus Interface Unit was also implemented.

- **Biostatistics** **[Guide: Prof. Arun Kumar]**

  Topic: Statistical analysis of performance of PG students at IIT BOMBAY **[Apr-2012]**

  One-way anova and two-way anova was performed on the data collected from the PG students of Bioscience department. The performances of students were compared on the basis of gender, academic background, and the university they belonged to in UG.

POSITION OF RESPONSIBILITIES

- Group Co-ordinator (solar energy) of Technology Vision 2035, an initiative by Technology and Information Forecasting Assessment Council (TIFAC), of Department of Science and Technology (DST), Government of India **[Aug-2012]**
- Singing Co-ordinator of departmental festival Mrudugandh **[Mar-2009]**
- Elected as Party Representative for consecutive 4 years (standard 8 to standard 11) **[2000-2003]**
- Elected as School Prefect to manage Middle School **[1999]**

AWARDS AND ACHIEVEMENTS

- Cracked National Defence Academy written and Service Selection Board Interview and got recommended from 19 SSB Bangalore **[Oct-2005]**
- Awarded as Mr. Fresher of the batch **[Mar-2005]**
- Won Best Singer award at departmental festival Mrudugandh **[Mar-2009]**
- Won third prize in Treasure Hunt organized during PG Cult at IIT BOMBAY **[2012]**