DUAL DEGREE PROJECT

Implementation of cognitive radio on the USRP kit — June 2013 - till date

Guide: Prof S N Merchant, Dept. of Electrical Engineering, IIT Bombay

- Carried out energy detection spectrum sensing to find the lowest energy frequency band.
- Set up calls and messages on a software defined GSM network named OpenBTS.
- Carried out a field testing of an OpenBTS network to check the interference with other nearby networks.
- Working on a cognitive OpenBTS system.

PROGRAMMING SKILLS

Languages: C, Matlab, Python, bash scripting, Assembly for the Intel 8080 microprocessor, Octave, Verilog, Ruby, SQL, XML.
Operating systems: Unix, Linux and Mac OS X.

COURSE PROJECTS

Scalable video coding using wavelets — Feb-Apr 2013

Guide: Prof V M Gadre, Dept. of Electrical Engineering, IIT Bombay

- Compressed three different spatial resolutions of a video together into a single bitstream
- At the receiving end, uncompressed the best resolution for the bit rate available.

Principal Component Analysis in face recognition — Oct-Nov 2012

Guide: Prof V Rajbabu, Dept. of Electrical Engineering, IIT Bombay

- Implemented an iterative algorithm of using PCA in face recognition.

Design and test an algorithm for restoring a brain image — Sep-Nov 2012

Guide: Prof Arjun Arunachalam, Dept. of Electrical Engineering, IIT Bombay

- Implemented an algorithm to remove noise artifacts from a brain image.
- Used the non-linear conjugate gradient method to optimize the estimate.

A simple AM voice Transmitter — Aug-Oct 2011

Guide: Prof S N Merchant, Dept. of Electrical Engineering, IIT Bombay

• Developed an AM voice transmitter with a carrier frequency of 1 MHz, taking input from a music player via a 3.5 mm jack.

Mini UID for IIT Bombay Campus — Oct-Nov 2009

Guide: Prof Deepak Phatak, Dept. of Computer Science and Engineering, IIT Bombay

• Automated fingerprint matching for the purposes of registration, verification and attendance.

SEMINARS

Measurement of interference temperature — Jan-Apr 2013

Guide: Prof S N Merchant, Dept. of Electrical Engineering, IIT Bombay

• Surveyed various ways of measuring interference temperature efficiently.
• Became familiar with the concept of Cognitive Radio.

LEDs for high speed applications (over 100 Mbps) — Mar-Apr 2013

Guide: Prof Joseph John, Dept. of Electrical Engineering, IIT Bombay

• Presented a seminar on how LEDs could be used for high speed fiber optic communications.
• LEDs are cheaper, rugged and safer to handle compared to laser diodes.

RELEVANT COURSES

Digital Communications, Probability and Random Processes, Fibre Optic Communications, Communication Systems, Communications Lab, Network Theory, Advanced Computing for Electrical Engineers, Microprocessors.

EXTRA CURRICULAR

• Secured a silver medal in the All India Computer Knowledge Competition 2006.
• '9/10' in the course EE 717: Advanced Computing for Electrical Engineers.
• **Organizer, Infrastructure Team**,Techfest 2010.
• **Social Service**: surveyed water and electrical resources of remote villages in Maharashtra.
• **Social Service**: taught math and physics to 6th standard students.
• **Interests**: Computer programming for technical problems, communications, problem solving, functional programming.