

AREAS OF INTEREST

- Communication Systems
- Digital Signal Processing
- Information Theory
- Wireless Communication
- Error Correcting Codes
- Software Defined Radio

TECHNICAL SKILLS

- **Operating Systems:** Linux, Windows.
- **Softwares Skills:** GNU Radio, Scipy, Scilab and \LaTeX
- **Programming Skills:** C, C++ and Python
- **Software Defined Radio Platforms:** USRP, RTL SDR

PROJECTS AND SEMINARS

- **Google Summer of Code, 2013: LDPC codes and more FEC in GNU Radio** (June 2013-Present)
Mentor - Dr.-Ing. Jens Elsner, CEL, KIT.
 - The project is to develop generic encoders and decoders for LDPC Codes in GNU Radio.
 - As a part of this project we also improve encoders and decoders for BCH and RS codes.
 - Algorithms for obtaining LDPC Codes are also implemented.
 - Block for belief-propagation decoder is implemented.
 - Block for back-substitution encoding is implemented.
 - Project is open-source and is available at <https://github.com/manuts/ldpc>
- **M.Tech. Project: Application of LDPC codes to Multiuser Communications** (July 2013-Present)
Guide - Prof. Sibiraj B Pillai, IIT Bombay.
 - LDPC codes are characterized by sparse parity check matrices
 - The project is to study LDPC encoding and decoding algorithms and extend them to multiuser scenario.
 - Belief-propagation decoder and back-substitution encoder blocks are developed.
- **DARPA Spectrum Challenge:** (March. 2013-Present)
 - During the hurdles and wild-card tournament we designed a transmitter-receiver pair, for two scenarios.
 - A pair of nodes competing against another to communicate a file in shortest time is designed.
 - A pair of nodes cooperating with two other pairs is designed.
 - All the pairs use same the same 5MHz frequency band.
 - Single-handedly pushed the team through wild-card tournament.
 - In the wild-card tournament our team surpassed teams from top universities and industries.
- **DSP Course Project: Design of Digital Filters** (Nov. 2011)
Instructor - Prof. Vikram M Gadre, IIT Bombay.
 - Designed FIR and IIR filters.
 - Designed filters under band-stop, band-pass and low-pass responses.
 - Filters were designed under chebyshev and buttorworth approximations.

- **M.Tech. Seminar: Resource allocation in Wireless Networks** (Nov. 2011)
Guide - Prof. Sibiraj B Pillai, IIT Bombay.
 - We studied optimal power allocation in flat-fading multiple access channels.
 - Schemes achieving rate tuples under information theoretic setup were studied.
- **DSP Course Project: Localization of audio source** (Nov. 2011)
Instructor - Prof. Vikram M Gadre, IIT Bombay.
 - In this project we designed a system to locate an audio source.
 - The delay between audio signals captured from two mics is used to locate audio source.
- **B. Tech. Main Project: Study of Orthogonal Frequency Division Multiplexing** (Jan. - June 2010)
Guide - Prof. P Harikrishna Prasad, NIT, Warangal.
 - The goal of the project was to study OFDM systems.
 - Matlab simulation of an OFDM system was done as part of this project.

COURSE WORK

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|------------------------------------|----------------------------------|
| ◦ Communication Systems | ◦ Error Correcting Codes |
| ◦ Information Theory | ◦ Digital Message Transmission |
| ◦ Digital Signal Processing | ◦ Wireless Communication |
| ◦ Statistical Signal Analysis | ◦ Applications of Linear Algebra |
| ◦ Markov chains and Queuing System | ◦ Optimization Techniques |

ACHIEVEMENTS

- Our team secured a spot in the finals of **DARPA Spectrum Challenge**.
- Our team won first prize in Junk-Yard wars in Technozion 2010.
- Best outgoing student of the year 2004 in JNV Malampuzha.

WORK EXPERIENCE

- **Graduate Engineering Trainee (C & I), Adani Power Limited** (July 2010-January 2011)
 - Obtained training on various functional units like boiler, turbine, water-treatment etc in a power plant.
 - Exposure to super-critical thermal power plant.
 - Obtained two weeks of training on soft-skills during this period.
- **Industrial Training: BSNL Kerala Circle** (May 2008 - June 2008)
 - Various aspects of GSM Architecture were studied.
 - Training on OMC Radio, OMC Switch, Radio Planning and BSS were obtained.
 - RAN drive tests were done.
 - Realtime traffic analysis of telecom networks were conducted.

POSITIONS OF RESPONSIBILITY

- **Teaching Assistant**
 I was assigned the duty of System Administrator in the following lab courses.
 - EE-318, Electronics Design Lab - I, Spring 2012, Spring 2013.
 - EE-712, Embedded System Design Lab, Spring 2012, Spring 2013 .
 - EE-389, Electronics Design Lab - II, Autumn 2012.
 - EE-616, Electronics System Design Lab, Autumn 2012.

As the System Administrator I did the following things.

- Configure and maintain all the computers in used in the labs.
- Configure and maintain four server grade machines in the labs.
- Configured Apache server, FTP server, Samba server and DHCP server.
- Wrote a bash script to automate user maintenance.

HOBBIES

- Reading, coding, music and movies.