Curriculum- Vitae

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Third Year (Dual Degree Program)
(Communication & Signal Processing)
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Date of Birth: 20th Jul 1990

EDUCATIONAL PROFILE:

DEGREE / DIPLOMA	UNIVERSITY / BOARD	YEAR OF PASSING	MARKS	MAJOR(S)
Dual Degree(B.Tech+M.Tech) (Communication and Signal Processing)	Indian Institute of Technology Bombay, Mumbai, INDIA	Pursuing (2012)	7.31 on a scale of 10.0(after 5 semesters)	Electrical Engineering
All India Senior Secondary Examination(Class 12)	Central Board of Secondary Education	2007	90.6 %	English, Mathematics, Physics, Chemistry
All India Senior School Certificate Examination(Class 10)	Central Board of Secondary Education	2005	91.8%	General

MAJOR ACADEMIC ACHIEVEMENTS AND AWARDS

1. Secured **All India Rank 451** in **IIT-JEE-2008**, (out of about **3, 25,000** applicants) the Entrance test to prestigious Indian Institutes of Technology.
2. Secured **State Rank 12** and **All India Rank 162** in **AIEEE-2008** (out of 9**, 00, 000** applicants), National Entrance Examination for major Engineering Colleges in India except IITs and was awarded All India CBSE merit scholarship for securing rank within top 350.
3. Awarded **Certificate of merit** for being placed in **National top 1%** students all over India in **National Standard Examination in Astronomy** (NSEA) 2006-07 and also qualified **Indian National Astronomy Olympiad**(INAO)
4. Selected with other 50 students from all over India, under the **National Initiative on Undergraduate Sciences** (NIUS) scheme for an enrichment camp in June-2009.

RELEVANT COURSES (*COVERED/WILL BE COVERED BY APRIL, 2011*)

Electrical and Electronics Courses:

- **Power:**
  - Power Systems
  - Power Electronics
  - Electrical Machines and power electronics
  - Introduction to Electrical engineering
- **Control and Computing**
  - Control Systems
  - A first Course in optimization
  - Network Theory
- **Electronics and microelectronics**
  - Electronic Devices and Circuits
  - Analog Circuits
  - Introduction to Electronics

Communication and Signal processing

Digital Signal Processing
Microprocessors
Digital Communication
Communication Systems
EM Waves
Signals and Systems

Other Relevant Courses :

Computer programming and Utilization
Electricity and Magnetism
Economics
Engineering graphics and drawing

Mathematics:

- Probability and Random Theory
- Complex Analysis
- Ordinary and Vector Calculus

Differential Equations (ODEs & PDEs)
Linear Algebra
Data Interpretation and Analysis

KEY PROJECTS UNDERTAKEN

1. Image Processing and Neural Networks: Automatic License plate recognition system. *(December'09-till date)*

Guide: **Prof. Dilip Ahalpara** (***Institute of Plasma research, Ahmedabad)***

- Worked out an algorithm in **JAVA** to process an image by sharpening, edge-detection, brightness and contrast adjustment technique to prepare image suitable for further processing.
- Developed an executable code in JAVA for **binarization** of images, and tested it on 200 images of Mumbai car license plate characters with more than **80%** correct character recognition results.
- Using **nntool** of Matlab, aim is to develop a sophisticated system to train the neural neurons with large samples of binarized images to recover the characters of whole license plates with good precision and accuracy.

2.Analog design project: "Wideband active RC filter design" *(Summer 2010)*

Guide: **Prof. Maryam Baghini**

- Designed and simulated a **fifth** order **Chebyshev** active low pass filter with a **Fast Tuning Scheme** for wireless communication Receivers and Transmitters.
- Filter was designed using an operational amplifier (built from **.18u CMOS** low voltage technology in **Mentor Graphics** IC studio software) and passive **LC ladder** circuit.
- Designed filter had **corner frequency** equal to **10MHz** and it could be tuned to higher frequencies by suitably designing the LC ladder circuit.

3.Digital Circuits Project: "Digital car racing." *(March-April,2010)*

Guide: **Prof. M.B.Patil**

- Complex circuitry was designed and implemented using **digital logic hardware** on a circuit board where moving virtual tracks and obstacles were created by arrays of LED's and car was restricted to move left and right by triggers.
- Designed an innovative **clock generator** to control the speed of the tracks. **Digital score display** which shows the no. of collision with obstacles was an added feature.

4.A DSP project: 'Image processing' & 'Spectral Analysis using Annihilation filter' *(Sep'10 – Nov'10)*

Guide: **Prof. S.N.Merchant & Prof. Subhasis Chaudhari**

- Programmed in C++ to add noise to images and pass it through **mean** and **median filter**. Image was also processed upon to obtain its laplacian and the gradient.
- Solved complex exponential equations using minimum number of samples using the **annihilation filter** in MATLAB.

5.An Economics Project : "Case study of Newspaper market in India" *(October,2010)*

Guide: **Prof. Haripriya Gundimeda**

- Compiled a report on the market share of various newspapers and the history of newspaper market in India.
- Analyzed the prevailing market conditions and concluded that almost perfect competition exists in newspaper market of India.

6.Signal and Systems Application Project: "JPEG Image Compression and Image Filtering." *(March-2010)*

Guide: **Prof. V.M.Gadre**

- Achieved "*lossy*" JPEG image compression using the concepts of **Discrete Cosine Transform** and **Low pass filtering**. Compression upto 60% accomplished without sacrificing the image quality substantially.
- Conceptualized the idea of **Gaussian Filter**, developed an algorithm for **Image filtering** to reduce noise and details in digital images and provided **smoothening** effect to images.

7. A C++ project : "Graphical user Interface scientific calculator" *(October- 2008)*

Guide: **Prof. Abhiram Ranade**

- Developed an executable C++ code for scientific calculator, capable of calculating all basics to complex calculations and plotting of graphs.
- Differentiation, integration, vectors, matrix equation solver and polynomials, unit conversion were the major functions that were implemented.

8. A RF project: "Colpitts Oscillator Design" *(October 2010)*

Guide: **Prof. S.N.Merchant & Subhasis Chaudhary**

- Designed a working pcb design of Colpitts Oscilltor for oscillator frequency of 1MHz.

INTERNSHIP

Innovate Edu Private Ltd., Delhi (Summer Internship May 2010-July 2010)

Topic: **Content building with real life applications and animations of engineering concepts.**

- Worked with team members to provide expertise in Engineering Subjects content by introducing new innovations and concepts in Education sector through animations and providing liveliness to topics.
- Analyzed different products prevailing in the market and feedback from the users and came up with **cutting-edge solutions** to persisting conundrum present in the market using.
- Successfully completed two months of internship which was highly appreciated and was awarded the certificate of **Content developer-Level 1**.

COMPUTER PROGRAMMING SKILLS

1. **Languages:** C/C++, Java, Assembly code for 8085.
2. **Web Development:** HTML, CSS, Java-script.
3. **Packages:** MATLAB, ANSYS, Spice, LaTeX, Maxwell
4. **Operating systems:** Windows, Linux.

POSITIONS OF RESPONSIBILITY

1.Joint Secretary (EESA- Electrical engineering students association): April 2010 – April 2011

- Part of a 7-member **EESA Council**, responsible for organizing and scheduling department festival "**AAGOMANI**" and intra-department events, developing infrastructure, budget preparation and to look out for maintenance issues in the department.
- Pioneered the idea of **SPAS** (Summer project allocation system) and **Book-Bank** with other council members for department students, which got an extremely heartening response from students and professors.
- Revived enthusiasm in department **UGs** and **PGs** students by initiating and conducting intra-department sports events, workshops, **t-shirt** and **poster-designing** contests.

2. Coordinator – Techfest'2010 (IITB Technical Festival)

- Leading a team of 10 students successfully organized and coordinated 2 mega events "**Free-Kick**" and "**SolarSplash**" of Asia's largest technical festival attracting an audience of over **40000**.
- In collaboration with other coordinators successfully managed and conducted **4 workshops** with remarkable turnout of more than 2000 participants.

MISCELLANEOUS

1. Awarded **B-Certificate** for being a yearlong cadet in **NCC** (National Cadet Corps) and attended **NCC camp** in Nov/Dec -2008 organized by 2-MAH REGT.
2. Participated in **PRABHAT'08**, a workshop on **Linux and Networking fundamentals**, organized by CSEA in August-2008, and awarded appreciation certificate for the same.
3. Worked as an **Organizer** in **Techfest-2009**, IITB annual Technological Festival.
4. Represented school for an inter school quiz competition on **Metallurgical and Material sciences** organised by **IT-BHU** (Varanasi) at Intermediate class 12th level.
5. A passionate player and follower of **Cricket** and **Badminton** and participated in many **badminton contest**s at Intermediate and Institute level.