Hemant Meena **11D070038**
Electrical Engineering **Dual Degree (B.Tech+M.Tech.)**
Indian Institute of Technology Bombay **Male**
Specialization: Communication & Signal Processing **DOB: 30/03/1992**

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2016	5.83
Intermediate/+2	K.V.NO.1 KOTA (RAJASTHAN)	K.V.NO.1 KOTA (RAJASTHAN)	2010	85.00
Matriculation	K.V.NO.1 KOTA (RAJASTHAN)	K.V.NO.1 KOTA (RAJASTHAN)	2008	69.00

SCHOLASTIC ACHIEVEMENTS

- Qualified IIT-JEE 2011 and secured rank 90(category rank) among 18130 students applying for admission into the IIT in the same category
- Secured 95% marks in both chemistry and maths in CBSE 12th Board Examinations

Dual Degree Thesis

- **The Response Time Tail Under Generalized Max-Weight Scheduling**

Project *Guide*: *Prof. Jayajrishnan U Nair* *(Autumn Semester: 2015-present)*

- Implementing the response time tail under generalized max-weight policies in settings where the traffic flows are highly asymmetric.
- Design and analysis of scheduling policies for multi-class queues

PROJECTS

- **Canny Edge Detector to detect wide range of edges in images**

Project Guide: *Prof. Shabbir Merchant, Dept. of EE, IIT Bombay* *(Autumn Semester: 2014-15)*

- Implemented Canny Edge Detection algorithm to detect wide range of edges in images. It has multi-stage algorithms.
- The optimal function Canny's detector is approximated by the first derivative of Gaussian.

- **Principle Component Analysis for Facial Recognition**

Project Guide: *Prof: V. Rajbabu, Dept of EE, IIT Bombay* *(Autumn Semester: 2014-15)*

- Implemented principle component analysis (**PCA**) to compress image vectors for facial recognition
- Investigated the correlation of error with number of components and identified the plateau region
- Examined the correlation between **eigenface**'s variability and magnitude of corresponding **eigenvalue**

- **Implementation of Ordered Binary Decision Tree**

Project Guide: *Prof. Sachin B Patkar, Dept. of EE, IIT Bombay* *(Autumn Semester: 2014-15)*

- Implemented a Ordered Binary Decision Tree in JavaScript, validated its correctness for various inputs and traverse through tree to get its correct value for a given input.

- **Implementation of a Digital Clock using CPLD Board**

Project Guide: *Prof. Saurabh Lodh, Dept. of EE, IIT Bombay* (Spring Semester: 2012-13)

- Implemented a complete Digital Clock with reset buttons on 4 segment multiplex display using CPLD Board in C++ with Quartus interface
- Designed an Analog clock using circular led matrix on the same CPLD board

- **LED counter and Automatic Closure of lift door**

***Project Guide**: Prof. Anil Kottantharayli, Dept. of EE, IIT Bombay* (Spring Semester: 2012-13)

  - Designed a digital circuit for Automatic Closure of lift door and displayed on 7-segment display
  - Photodiode sensor is used for counting the no. of people entering or leaving the lift
  - The ambient light intensity is detected using a photodiode based circuit

TECHNICAL SKILLS

- **Programming**: C/C++, Python, Java, Assembly, Android, HTML, CSS, PHP with MySQL, JavaScript
- **Microcontrollers**: 8051 (PT-51plateform), Arduino, 8082 microprocessor
- **Software Packages**: LTspice, Ngspice, Logisim, Quartus, Keil, Matlab, Eclipse
- **Operating Systems**: Windows, Linux

RELEVANT COURSES

Department courses:

Theory courses: Digital Comm., Digital Signal Processing, Advance Computing for Electrical Engineers (Data structure and Algorithms), Advance Topics in Signal Processing, Comm. and Network, Control Systems Network theory, Signals and Systems, Communication Systems, Microprocessors

Lab course: Electronic Devices Lab, Machines Lab, Digital Circuits Lab, Communications Lab, Microprocessors lab, Digital Signal Processing Lab, Control Systems Lab.

Mathematics course: Introduction to cryptography, Probability and random processes, Estimation and Identification, Linear Algebra

EXTRA CURRICULAR ACTIVITIES

Tech and Robotics

Designed and developed different robots such as

- Control a bot using **Bluetooth module with an android app** which sense the reflection of light coming out from the surface by IR sensors. The values read by Arduino board controls the speed and direction of bot. The serial communication was done between Bluetooth module and Arduino board.
- **Line Follower** (Autonomous bot)-follow the white line or some specific colour of line using Arduino board and C programming
- Solar power operated autonomous aqua robot which can charge from solar energy
- Rope climber bot which can climb up to the rope very efficiently
- Remote Controlled RF Car

Achievements (http://homepages.iitb.ac.in/~hemant_meena)

- Developer at social network website **Floatpage.com**. Developed PHP APIs for Signup/Sign in and Thumbnail scraper
- Developer of android apps, Gluon (Socket programming based chat app) and Tachyon (Photo sharing app).
- Awarded the **Tech Color** of Hostel-5 during 2012-2013 for outstanding contribution in the field of technical activities of Hostel-5
- Developed **YouTube Video Downloader** extension and other apps
- Attended a 10 days annual NCC camp and Awarded NCC C-Certificate in the year 2011-2012
- Organiser at Ozone Department in Techfest-2012 (Asia's Largest Science and Tech. Festival).
- One of the participants in Guinness World Record of the most people solving Rubik's cubes simultaneously