	Praveen Agrawal	12D020030
	Electrical Engineering	UG Third Year (Dual Degree)
	Indian Institute of Technology Bombay	Male
	Specialization: Communication & Signal Processing	DOB: 18/10/1993

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2015	8.41
Intermediate/+2	CBSE	Delhi Public School, Bokaro	2012	94.40
Matriculation	ICSE	St. Joseph's School, Dumka	2010	93.86

SCHOLASTIC ACHIEVEMENTS

- **Branch Changed** to Electrical Engineering Dual Degree from Chemical engineering Dual Degree on the basis of academic excellence in the first year of under graduation at IIT Bombay   (2013)
- Secured **All India Rank 1453** in IIT-JEE-2012 amongst 0.5 million students   (2012)
- Awarded **Scholar Badge** by Delhi Public School, Bokaro for academic excellence in Class XI (2011)
- Secured **International Rank 27** in International Mathematics Olympiad 2011 conducted by Science Olympiad Foundations (SOF)   (2010)
- **District topper in ICSE** Class10th board exams with 93.86%   (2010)
- Received merit certificate by Prabhat Khabar press for the outstanding performance in Class 10th ICSE exam   (2010)

KEY PROJECTS UNDERTAKEN

Poisson and Schrodinger Equation Solver   (Apr '14 – May '14)
Guide: Prof. Dipankar Saha ((Department of Electrical Engineering, IIT Bombay)
- Studied the mathematics involved in solving the semiconductor equations in **heterojunction** devices
- Discretized the poisson equation and the schrodinger equation using **central difference technique** to obtain their respective matrix equations
- Programmed the solver using MATLAB which took the charge density function in the semiconductor substrate as an input and plotted its **conduction band edge, eigenfunctions and the eigenvalues**

Analog Alarm Clock on VGA display   (Feb '14 – Apr '14)
Guide: Prof. Madhumita Date ((Department of Electrical Engineering, IIT Bombay)
- Designed an alarm clock with four hands (including alarm hand) which would be displayed on a VGA
- Solely devised the algorithm to display the clock in complete synchronization with the real time
- Programmed the clock using **Verilog HDL** on **a DE0 Nano FPGA Board**
- Provided user control to set the timings during the run time of the code through external switches

Internship, Plancess EduSolutions Pvt Ltd.   (Dec '13)
- Appointed as the **manager** of the newly formed videos department of Plancess
- Responsible for planning videos (GDs, academic lectures, etc.) on issues addressing the JEE aspirants
- Conducted group discussions amongst IIT students to clear out crucial confusions of the JEE aspirants
- Penned down over **50 audience targeted articles** for maintaining the online blog of Plancess

Voice Controlled Bot   (May '13 – Jun '13)
Under Students' Technical Activities Body (STAB), IIT Bombay
- Studied **audio signal processing** and developed algorithms for voice recognition system
- Programmed the voice recognition system (using MATLAB) to recognize 4 keywords (forward, back, left & right) which can be extended further to any number of keywords
- Designed and built **a wireless car & a humanoid bot** that was controlled with the 4 voice commands
- Output generated by MATLAB after processing of the voice input was sent to an **arduino** board which generated the corresponding voltage output to run the bot

Shopping Site   **(Mar '13 – Apr '13)**
Guide: Prof. Sridhar Iyer (Department of Computer Science and Engineering, IIT Bombay)
- Developed an **offline** shopping site similar to **flipkart.com** using **C++** programming language
- Prepared a database to store price and all details of items available for purchase for the user
- Efficient use of file handling to record User IDs, passwords, purchase history and the details of the user's account which are filled by the user at the time of signup

Tic-Tac-Toe Game   **(Feb '13)**
Guide: Prof. Sridhar Iyer (Department of Computer Science and Engineering, IIT Bombay)
- Programmed the cross & zero game to include **CPU vs. player and 2 player modes** using Scratch
- Involves 3 difficulty levels (easy, medium & hard) in CPU vs. player mode & a user friendly interface
- Implemented appropriate constraints to make the **CPU invincible** in the hard level of difficulty

Balloon Shooting Game   **(Jun '11 – Aug '11)**
CBSE Class XII Computer Science Project
- Developed a shooting game using Turbo C++: user has to shoot a group of balloons in minimum time
- Built functions to create continuous motion in the balloons which were to be shot by a bow and arrow
- Implemented the concept of file handling to help the users to post their comments about the game
- Designed a menu with options like instructions, high scores, etc. & developed a graphical interface

POSITION OF RESPONSIBILITY

Manager, Media and Creatives, Student's Technical Activities Body (STAB)   **(July '14 – Present)**
Technical Body of students' gymkhana, IIT Bombay
- Responsible for **designing** the **posters, t-shirts, brochures, certificates** etc. for all the **6** STAB clubs
- Working with the web manager for creating an attractive and lucid **STAB website**
- Responsible for the designing and editing of **Lightsaber (Institute's Technical Newsletter)**

Coordinator, Food and Beverages, Mood Indigo   **(May '13 – Dec '13)**
Mood Indigo – Cultural festival of IIT Bombay: Asia's largest cultural festival
- Worked for association with brands like **Subway, Faasos, Costa coffee, CCD**, etc.
- Planned and successfully executed a procedure to ensure proper food distribution during the festival
- Managed about 20 organizers solely to ensure better and efficient food distribution

Coordinator, Ozone, Techfest   **(Nov '13 – Jan '14)**
TechFest – Science and Technology festival of IIT Bombay: Asia's largest Science and Technology festival
- Managed the setups of gyroscope, paintball and laser tag during the 3 days of the festival
- Designed innovative **3D structures** to create the ambience of various arenas of the institute
- Solely guided the organizers to develop **over 200 origami structures** to construct the TechFest logo

Manager, Hindi Utsav   **(Oct '12)**
IIT Bombay's 1st ever Hindi Cultural Festival
- Planned and executed various competitions like debate, poetry writing, quiz, etc. during the festival
- Conceptualized ideas to publicize the festival in the campus which resulted in huge participation

TECHNICAL SKILLS

- **Programming Proficiency**: C/C++, Java, Scratch, HTML, CSS, Verilog HDL, Assembly Language
- **Hardware Experience**: CPLD (Krypton), FPGA (DE0-Nano), 8051 microcontroller, arduino
- **Others**: Android app development, MATLAB, Adobe Photoshop, Sony Vegas, Keil, AutoCAD, NGspice

KEY COURSES UNDERTAKEN

- Advanced Computing for Electrical Engineers
- Fundamentals of Digital Image Processing
- Probability and Random Processes
- Analog Circuits
- Electronic Devices and Circuits
- Digital Systems
- Electrical Machines and Power Electronics
- Special Semiconductor Devices
- Network Theory
- Computer Programming and Utilization
- Communication Systems
- Microprocessors
- Electromagnetic Waves
- Signals & System
- Complex Analysis
- Differential Equations
- Linear Algebra
- Calculus
- Data Analysis and Interpretation
- Modern Physics

EXTRA CURRICULAR ACTIVITIES

- Received **Hostel Cultural Special Mention** Award for the contribution to cultural activities (Apr '14)
- Developed my own **webpage** using bootstrap template: *http://home.iitb.ac.in/~praveen.agrawal*   (Dec '13)
- **1st position** in Hindi debate General Championship – Inter hostel competition   (Sep '13)
- **1st position** in Sophie Fine Arts Championship – Book cover designing challenge   (Aug '13)
- Acted in the **winning team** of **Performing Arts Festival (PAF)**, Mandali   (Mar '13)
- Stood **2nd** in Hindi Group Discussion and Panel Discussion organized in Hindi Utsav   (Oct '12)
- Made an autonomous line following bot for a race competition in IIT Bombay   (Sep '12)
- Secured **1st position** in Freshie Productions – inter hostel freshmen street play competition   (Sep '12)
- Secured **1st position** in intra hostel dramatics competition   (Aug '12)
- Declared as the **best speaker** in **Freshiezza** Hindi Debate competition   (Aug '12)
- Made a radio controlled car for **XLR8**, an F1 race competition in IIT Bombay   (Aug '12)
- Worked in Educational Outreach department **of National Service Scheme (NSS)** for 2 consecutive semesters to teach underprivileged students at **'Asha'**- an NGO   (Jul '12- Apr '13)
- Represented school in zonal debate competition organized by the **ICSE** board in Devghar   (Aug '10)
- Secured **2nd position** in intra school English debate championship in class 10th   (Jun '10)