Janeel Rajesh Patel **180020038**
Electrical Engineering **UG Second Year**
Indian Institute of Technology Bombay **Male**
Specialization: Communications and Signal Processing **DOB: 11/09/2000**

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2020	9.09
Intermediate/+2	HSC	PACE Jr. Sc. College	2018	95.69
Matriculation	SSC	Swadhyay Bhavan School	2016	94.60

Scholastic Achievements

- Granted **Change of Branch** to the Department of Electrical Engineering for exemplary academic performance in the first year ['19]
- Achieved **99.13** percentile in **JEE Advanced** amongst 165 thousand candidates ['18]
- Secured **99.53** percentile in **JEE Main** amongst 1.14 million candidates ['18]
- Awarded **Scholarship for Higher Education** under **INSPIRE** by virtue of performance within **top 1%** of the school board at the class XII level ['18]

Projects

Team STRIDE | Electrical Subsystem [Jan '19 - Present]

*Student technical team currently developing an **autonomous quadruped** for easy maneuvering through difficult terrains where a traditional four-wheel drive fails*

- Currently involved in designing and simulating proper electrical sub-circuits to ensure **battery protection** and managing the electrical assembly of the entire quadruped
- Employed to calculate the **power budget** for the electrical system in order to establish seamless functioning of various components and sub-circuits

Sound Source Localizing Robotic Vehicle [Jun '19 - Aug '19]

Institute Technical Summer Project | Institute Technical Council

- Built an autonomous robot that applies the concept of sound triangulation to locate a coplanar sound source in a disturbance-free environment
- Implemented the **LM358** audio-amplification circuit to obtain an analog input from the sound source
- Performed analog-to-digital conversion of the input signal using **MCP3008** and fed this signal into a Raspberry Pi using **SPI communication protocol**
- Used the **numpy** and **scipy** libraries in Python to store and process the data for eliminating the noise due to non-idealities using the **Fast Fourier Transform** package
- Utilized the **TDOA** algorithm to calculate the rotation angle from the data acquired and then employed **differential mechanism** to rotate the vehicle towards the source

ABU Robocon 2019 [Jan '19 - Apr '19]

Robot competition wherein a manual (or semi-autonomous) and an autonomous bot from each team compete

- Implemented throwing mechanism in the manual robot by employing **double-acting pneumatic cylinders** with **solenoid valves** to hurl an unsymmetrical object over a large range
- Assisted in the fabrication of various components and assembly of manual and autonomous robots
- Achieved **All India Rank 9** in Stage I of RoboCon India out of 50+ national teams

General Code to construct a conductance matrix for resistive circuits [Sep '19 - Nov '20]

Introduction to Electrical Systems (EE 111) Course Project | Instructor: Prof. Himanshu Bahirat

- Building a conductance matrix for a resistive circuit with only independent sources based on topology of the network provided as a netlist
- Constructing the injected current vector and solving the Node Voltage Equation to obtain voltages at each essential node in the circuit

Remote Controlled Plane Making Competition [Sep '18 - Oct '18]

Aeromodelling Club | Institute Technical Council

- Successfully designed and built a sophisticated remote-controlled airplane based on key aerodynamic concepts
- Used **Phoenix RC** Flight Simulator to practise radio-controlled airplane flight on a computer without the risk and expense of damaging a real model
- Developed a reliable **landing mechanism** for the airplane which could reduce the damage inflicted in case of an abrupt landing

Positions of Responsibility

Volunteer | Grand Finale, Smart India Hackathon 2019 (Hardware Edition) [Jul '19]

5-day Hackathon wherein selected teams had to build prototypes from scratch

- Managed and catered to the hardware requirements of 9 highly motivated tech-enthusiastic teams by purchasing requisite hardware components worth **INR 170 thousand**
- Assisted various teams' members to utilize various machinery and power tools in the Tinkerers' Lab

Mentor | XLR8 Competition, Electronics and Robotics Club [Aug '19 - Sep '19]

Competition with 150+ teams and 600+ participants

- Mentored a team of 4 hobbyists to build a robotic vehicle controlled wirelessly via Bluetooth capable of avoiding various obstacles in its path
- Assisted the team members to operate various tools in the Tinkerers' Lab and contributed to their understanding of various electrical components

Skill Set

Programming	C, C++, Python, MATLAB, HTML
Simulation & CAD	SolidWorks, AutoCAD (2D), NGspice, LTspice, EAGLE, Modellica
Software Packages	MS-Office 2016, LaTeX, GNUPlot
Embedded Systems	Arduino, RaspberryPi
Operating Systems	Windows, Linux (Ubuntu)

Relevant Courses Undertaken

Electrical Engineering	Electronic Devices & Circuits, Electrical Machines & Power Electronics*, Signals & Systems*, Network Theory, Data Analysis & Interpretation
Mathematics	Complex Analysis, Calculus, Linear Algebra, Differential Equations I & II
Programming	Computer Programming & Utilization
Other	Quantum Physics & Applications, Physical Chemistry, Economics, Basics of Electricity & Magnetism, Engineering Graphics & Drawing

** to be completed by Spring '20*

Extra-Curricular Activities

Sports

- Water Polo enthusiast and completed a two-semester aquatics training course under the National Sports Organization (NSO) ['19]
- Participated in 7 km long cycling marathon (Cyclothon) organized by Techfest, IIT Bombay ['18]

Other

- Attended 5 sessions of Web Development Bootcamp under the Technical Summer School (TSS) conducted by the Career Cell, IIT Bombay [Jun '19]
- Represented Hostel 6 in Music Video Arcade GC in the first semester and won the $\mathbf{4^{th}}$ prize ['18]
- Studied French language for 3 years as a subject in secondary school ['14 - '16]