SCHOLASTIC ACHIEVEMENTS

- Pursuing a **minor** in **Electrical Engineering**, IIT Bombay *(2017)*
- Among the top 3% percentile in **JEE Advanced** and 99.35% percentile in **JEE Mains** *(2016)*

KEY PROJECTS

- **Qua-draped | STRIDE | Electrical Subsystem** *April'19-Present*
  *Student Technical Team currently developing an **autonomous quadruped** (four legged bot) for easy maneuvering through difficult terrains where a traditional four-wheel drive fails*
  - Developed an **Inverse Kinematics** algorithm in **micro-controller** to execute the motion of quadruped
  - Responsible for the Developing the **Network Infrastructure** for live streaming of camera feed of the quadruped and **long range communication** between quadruped and ground station
  - Responsible for developing a **Controller** for qua-draped to control from ground station

- **ABU Robocon | Controls Subsystem** *Jan'19-April'29*
  Competition organised by ABU in Mongolia requiring autonomous walking bot and another with throwing capability
  - Made a Controller to integrate functionality of different components like **grippers**, **pneumatic cylinder** and motors to perform tasks given in **ABU Robocon 2019**
  - **Developed a filter** which helped to control motor more accurately using **Arduino micro-controller**

- **Terrace Farming Bot | Mechanical Subsystem** *Nov'19-Dec'19*
  A Competition organized by DIC Agro, IIT Roorkee during 8th Inter IIT Tech Meet
  - Ideated the linear actuation **mechanism to climb up and down the terraces** of a particular height and perform the farming tasks like seeding, plowing, leveling and harvesting **autonomously**
  - Designed and simulated the cad model of the bot and assembled it by manufacturing it's all parts
  - Presented the mechanical subsystem on the behalf of Inter IIT contingent in DIC problem statement

- **Composites Making | Course project MM152** *April'19*
  Guide - Prof Parag Bhargawa, Department of Material Engineering and Material Science, IIT Bombay
  - Learnt how to make composites using different fibers like glass fiber, carbon fiber using their prepreg
  - **M**ade a strong **carbon fiber sheet** by curing, vacuum bags, breather and prepreg of carbon fiber

- **Quad-copter | Hobby project** *Feb'19-April'19*
  Electronics and Robotics Club, Institute Technical Council, IIT Bombay
  - Made a Quadcopter **from Scratch** using Arduino Microcontroller by implementing a **PID Algorithm**
  - Implemented a **Advanced Complementary Filter** Algorithm to **reduce noise up to 99% in gyroscope** generated by vibrations of propellers and **tested on 2D model** approximation
  - Successfully built the quad-copter to **safely take-off and land** and achieved **perfect stabilization** in air

- **Cozmo Clench | Techfest 2018** *Dec'18*
  Electronics and Robotics Club, Institute Technical Council, IIT Bombay
  - Competed with students from various engineering colleges in this Techfest Robotics competition
  - Developed a **wireless joystick controller** which could control the motion of bot and functionality of robotic gripper to perform different tasks given like pick and drop box at particular checkpoints

- **Thor Hammer | Hobby project** *July'19-Aug'19*
  Electronics and Robotics Club, Institute Technical Council, IIT Bombay
  - Constructed an **electrical hammer** based on the concept of **Electromagnetism** of solenoid which was inspired from the one which is present in **MARVEL'S COMICS THOR**
  - Used a **NFC microchip** integrated in the form of ring as key to lift the hammer only by special person

- **Website Development | Electronics and Robotics Club** *July'19-Aug'19*
  Institute Technical Council, IIT Bombay
  - Designed a **new official website** for Robotics club using **Django framework** in period of one month
  - Created a **database** of various events, blogs and team members of the club to make it **user friendly**
- **Autonomous Path Finder | Line following competition** *Jan'18*
  Electronics and Robotics Club, Institute Technical Council, IIT Bombay
  - Built an **autonomous robot** which follows a white line and **designed IR sensor** to detect white lines
  - Implemented **PID algorithm** using Arduino for the control of speed of DC motors according to path
  - Successfully **cleared all 3 stages** and emerged as **2nd best performer (silver medal)**
  - Built an advanced version of bot and **represented IIT Bombay** in robotics festival **Robotex India 2019**
- **Home Automation | Arduino Hackathon** *Oct'18*
  Electronics and Robotics Club, Institute Technical Council, IIT Bombay
  - Built a home automation system to **Control home appliances** like bulb over the Internet **using IoT**
  - Integrated the **nodemcu (WiFi module)**, relay switch and android app to make project into action
  - Implemented the system in **Hostel lightning** during Diwali and **implemented Morse code** pattern
- **Gesture control bot | Arduino Makerthon** *Oct '18-Nov'18*
  Electronics and Robotics Club, Institute Technical Council, IIT Bombay
  - Built a bot using **accelerometer** and **RF module** which can be **controlled** by **gesture** of hand wirelessly
  - Assembled it in a week and got the **award** for **second best project** ideation and implementation
- **Vehicle tracker | Hobby project** *Dec'19-present*
  A real time tracker for vehicles to track their position on roads
  - Designed a **circuit having GPS module** on it, and made a working prototype of circuit of GPS tracker
  - Created a **website using Google Maps API and Google cloud** to track the location of vehicles on map
  - **Optimized the accuracy** of location of vehicles on roads by using Google's snap to road algorithm

TECHNICAL SKILLS

Languages	Embedded C, C++, Python, R, MATLAB
Web Development	HTML, CSS, JavaScript, Django, Google Maps API
Softwares	Arduino IDE, Autocad (2D) , Solid works, Git, Eagle
Electrical	Raspberry-Pi, Arduino, Node MCU, ESP32

Position of Responsibility

- **Convener | Electronics and Robotics Club | Institute Technical Council**
  - Part of a **17 member** team responsible for inculcating tech culture among fresh minds
  - Conducted sessions on **Arduino, Get Mechanised and Get Electrified** for 500+ tech enthusiasts
  - Organized **XLR8**, club's main flagship event which saw a rise in the number of participants by **35%** and a huge success rate of **92%** and a mentored **150+** teams in debugging
  - Organized hands-on sessions like *Electrified* & *HowThingsWork* to give insight to everyday equipments

Extra-Curricular Activities

- Made a **GPS tracker** with the help of **Node MCU** and coded it on Arduino IDE by using **Blynk App**
- Integrated **Xyloband** by using op-amps and mic to control the led bliking pattern according to music
- Participated in the **XLR8** competition and made a **bluetooth controlled bot to** tackel the obstacles and also **ideated the system** to show its status whenever it is going up or down the inclined plance
- **A**ttended the workshop on Communication systems, system engineering, IoT , ROS and Path planning
- **Volunteered** in the **Smart india hackathon finale** hardware edition to cater hardware requirments of teams
- Made an **AR glass** using ArudinoMini & oled display to project data on glass using the **principles of optics**
- Visited to the **Giant Metric Radio Telescope(GMRT)** and learned use the telescope to observe the stars
- **Volunteered** for 80 hours under **nation social service** team by planting and maintaing trees in the campus

Key Courses Taken

Electrical Engineering	Electronic devices, Introduction to electrical and electronics circuits
Computer Science	Computer programming and Utilisation, Web development
Miscellaneous	Quantum physics, Basics of electricity and magenetism, linear algebra