

Pursuing a **Minor Degree in Artificial Intelligence and Data Science** IIT Bombay

SCHOLASTIC ACHIEVEMENTS

- Awarded a **branch change** to **Electrical Engineering Department** among **1350+ students**. [’21]
- Bagged all India rank **1487** among **0.15** million aspirants in JEE Advanced conducted by IIT Delhi. [’20]
- Secured **99.69** percentile among **1** million candidates in JEE Main conducted by NTA. [’20]

PROFESSIONAL EXPERIENCE

Shooting Simulator | Xarpie Labs

[May’22 - July’22]

On-site Technical Internship | Guide: Arjun Jain

- Worked on a project "Shravya" a **simulation-based** training designed for the training of **Indian Army** personnel.
- Helped in designing and implementing an electro-mechanical-based **recoil system** using motors, springs and gears.
- Explored different cameras working for IR detection, and interfacing of **IMU** sensors with raspberry pi.

DynaDio | Murkh dobdob

[June’22 - July’22]

Start-up Internship | Guide: Gaurav Mukherjee

- Implemented hand and marker detection techniques using **Open CV** and **mediapipe** to get the real-time 3D-coordinates in space for drawing required 3D shape inside a specially prepared gel using a **pneumatic pump**.
- Used **stereo vision** using 2 different cameras and applied **calibration techniques** for calculating the depth.
- Converted coordinates to **G-code** which were sent to **Arduino** for the operation of a motor similar to a **3D printer**.

AI/ML PROJECTS

Road Accident Prevention

[June’22-Present]

Summer Project | Seasons of Code | Wncc,IITB

- Extracted live images from a webcam and used A **haar cascade** classifier for first detecting and then storing faces.
- Implemented a **CNN classifier** that detects and alerts the driver when his eyes are closed for a duration of time.
- Used a **variable score**, a value that was used to determine how long the person has closed his eyes.

Analysis of Covid-19 Data and Impact of Vaccination

[Oct ’21 - Nov ’21]

Course Project | DS203 Programming for Data Science | Guide: Prof. Amit Sethi |

- Applied data pre-processing techniques and performed **exploratory data analysis** and **descriptive analysis** to identify the correlation between various features and realize the major factors affected by vaccination.
- Implemented machine learning models like a **decision tree** and **random forest** along with hyperparameter tuning to predict newer covid cases and the effect of vaccination on the death rates.

CIFAR-10 Classification

[Dec ’21 - Jan’22]

Winters in Data Science Project | Guide: Garweet Sresth

- Implemented the concepts of deep learning and neural network for the classification of a database consisting of **60,000** 32×32 color images of each class into 10 classes using **Tensorflow**.
- Trained the model on **50,000** images and tested it on **10,000** images using pooling, convolution layers, and dropout.

TECHNICAL SKILLS

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|------------------------------|-------------------------------------------------------------------------------|
| Languages & Libraries | Python, C++ , VHDL, Numpy, Matplotlib, Pandas, Seaborn, \LaTeX , SQL |
| Simulation and CAD Softwares | Ngspice, Quartus Prime, Keil, AutoCAD, Lightroom |

CORE PROJECTS

RISC Microprocessor Design

[April'22-May'22]

Course Project | Guide: Prof. Virendra Singh | EE309:Microprocessor

- Ideated an efficient **8** register, **16** bit, RISC multicycle processor named "IITB-RISC" capable of accepting **hex inputs**.
- Enhanced the design in order to perform **17 instructions** including arithmetic, load, conditional, return and branch.
- Modelled an **FSM** controller for the **6-stage** pipelined processor using **behavioral modeling** in **VHDL** in Quartus.
- Included **hazard mitigation** techniques with forwarding, flush and branch prediction in a team of four.

Digital Circuits Laboratory

[Aug '21-Nov '21]

Course Project | Guide: Prof Maryam Baghini , Prof Madhumita | EE214:Digital Lab

- Learnt **structural**, **behavioral** and **data flow** modeling in **VHDL** and used **quartus** and **modelsim** to perform simulations and checking test cases for all the possible inputs and outputs combination.
- Implemented designs on **Krypton CPLD Board** and verified them by performing **scanchain** and **vjtag** on all the possible test cases and verified the output.

Micro-ATM

[Apr'22]

Course Project | Microprocessors Laboratory EE337 | Guide:Prof V. Saravanan

- Simulated the behavior of an ATM on **8051** micro-controller using **Embedded C** language.
- Implemented **UART protocol** to communicate with the keyboard for taking inputs of the ATM.
- Used **serial interrupt** to configure UART for 8-bit data transfer and displayed output on a 16x2 LCD display.

Line Follower Robot

[Sep'21]

Hand on Project | Guide: Electronics Robotics Club

- Designing a **robot** that using a **proximity sensor** to detect the presence of nearby objects without any physical contact , follows the path using **infrared sensors** on both sides of the bot.

POSITIONS OF RESPONSIBILITY

Department Academic Mentor |Department of Electrical Engineering

[May'22 - Present]

- Among the 46 selected from **100+** applicants on the basis of extensive **interviews** and **peer reviews**.
- Mentoring **12 sophomores** to help them with academics, time management and extra-curricular endeavors.
- Functioning as the **first point of contact**, aiding the communications between students and faculty.

Cultural Secretary |National Cadet Corps, IIT Bombay

[Jun'21 - Jun'22]

- Selected out of **45** aspiring candidates on the basis of skills evaluated through a **rigorous interview** process.
- Part of a **4-member** team responsible for the ideation and execution of cultural activities and social events.
- Responsible for complete **ideation** and **execution** of cultural GC for **180+** cadets that constitute **10+** genres.
- Accountable for the organization of **inter-college** Cultural Competition among **300+** cadets during annual camp.

KEY COURSES TAKEN

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|--------------|-----------------------------------------------------------------------------------------------------|
| Core | Communication Systems*, Microprocessors, Control Systems, Analog Circuits, Digital Systems |
| AI/ML | Programming for Data Science, Probability and Random Processes, Matrix Computation |
| Misc. | Introduction to Blockchain, Entering Financial Markets, Management Bootcamp, Differential Equations |

EXTRACURRICULARS

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|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sports | <ul style="list-style-type: none"> ◦ Participated in the International Yoga Day campaign to raise awareness of the benefits of yoga. ['21] ◦ Participated in Fit India Freedom Run 2.0 , organised by Ministry of Youth Affairs. ['21] |
| Cultural | <ul style="list-style-type: none"> ◦ Part of the winning team of Laughter Riots , the annual showcase event of Comedy Cons IIT B ['21] ◦ Participated in Xposure - The Photography competition , organized by Pixels Club IIT B in collaboration with OnePlus. ['21] |
| National Cadet Corps | <ul style="list-style-type: none"> ◦ Currently pursuing 'B' Certificate in NCC under the authority of Ministry of Defence,Govt of India. ['21] ◦ Donated one unit of blood to the Balasaheb Thackeray Blood Bank foundation in the ATC-419. ['21] ◦ Undergone rigorous training in an intense 10-day Annual Training Camp organized by 2 Mah Engr Reg, NCC. ['21] |

* to be completed by Nov 2022