Reet Mehta | **180020077**
Electrical Engineering | **UG Fourth Year (Dual Degree)**
Indian Institute of Technology Bombay | **Male**
Specialization: Communication & Signal Processing | **DOB: 13/06/2000**

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2021	8.78

Pursuing a **Minor** degree course program in **Computer Science and Engineering**, IIT Bombay

Academic Credentials

- Granted merit-based **Change of Branch** to Electrical Engineering by the institute for **outstanding** performance in the first year (awarded only to the **top 10%** students in the entire batch of 1000) *(2019)*
- Secured **All India Rank 898** in **JEE Advanced examination** 2018 among 1.55 lakh candidates *(2018)*
- Among the top **0.1** percentile students in **JEE Main** 2018 out of a total 11.35 lakh candidates *(2018)*
- Stood at the **National Rank 7** in grade 10 ICSE Board Examination 2016 amongst **1.7L** students *(2016)*
- Achieved rank in the **Statewise top 1%** in the **NSEJS examination** conducted by the IAPT *(2015)*
- Rewarded a **Scholarship for excellent performance** in the Mathematics Prodigy competition *(2014)*

Professional Experience

Data Engineering Intern | DSP Mutual Funds *(May '21 - July '21)*

Developed a comprehensive overview of customer portfolio in AWS Quicksight, approved by the Vice President

- Implemented optimal search queries in **SQL** and **Pandas** to extract key indicators for customer behaviour
- Ideated and laid foundations of **categorization models** for customers using parameters based on **high-dimensional covariance** metrics to explore underlying trends and replace current classification schemes
- **Automated** sales reports generation by linking **SQL tables** to **Quicksight**, reducing man hours by **90%**

Freelance Tutor *(June '20 - May '21)*

- Tutored and guided students aged 12-15 years for **national level** Maths and Science competitive exams
- Engaged in over **30+ hours** per month of live online video lectures and doubt-sessions over Zoom VC
- Prepared weekly tests, monitored performance and accordingly **adapted changes** in teaching methods

Key Projects Undertaken

Border Collie Optimization | Supervised Research Exploration *(Jan '22 - Present)*

Guide: Prof. Debraj Chakaborty *SRE Project*

- Developing heuristics to simplify and understand the dog-sheep pursuer-evader **optimization problem**
- Formulating **Greedy Algorithm** to represent underlying **mathematical equations** governing the motion of the dog-sheep pair based on simulation results and optimized trajectory models in MATLAB

Automatic Test Pattern Generator | PODEM Algorithm *(Sept '21 - Oct '21)*

VLSI CAD | Guide: Prof. Virendra Singh *Course Project*

- Worked in a team of two to create an Automatic Test pattern generator that runs **PODEM Algorithm** in order to detect Stuck-at faults in virtual **simulation** of a fabricated circuit and generate test vectors
- Synthesized a virtual **logic simulator** in python that creates any virtual circuit based on the input netlist
- The simulator can further produce desired **output sequence** based on an input test pattern sequence

Dynamic Memory Allocation | xv6 OS *(Feb '21 - Mar '21)*

Operating System | Guide: Prof. Mythili Vutukuru *Course Project*

- Studied the underlying hierarchy of system calls in **xv6 OS** and the memory management practice followed
- Introduced new **system calls** on top of the pre-existing xv6 OS code that enabled dynamic **on-demand allocation** of physical memory leading to a much better memory management among various processes

Image Editor GUI | Python *(July '21 - Aug '21)*
Image Processing | Guide: Prof. Amit Sethi *Course Project*

- Created an Image Editor with a **GUI interface** in python that allows users to load, edit and save images
- Implemented Image processing tools like Histogram equalization, Gamma Transform, smoothening etc from **scratch** using **vectorization** that accelerated computations to allow for real time response

Whack-a-Mole Game | PT-51 Board *(Oct '20 - Nov '20)*
Microprocessors Laboratory | Guide: Prof. Rajbabu Velamurugan *Course Project*

- Programmed the **8051 microcontroller** to play a game called Wac-a-mole using an LCD display
- Used a runtime-environment called **Keil uVision** with **Embedded C** for writing and debugging code
- Connected the native keyboard as UART peripheral via **serial I/O** to give inputs to play the game

Flappy Birds | Game Development *(May '20 - June '20)*
.NET Windows application using OOPS concept *Self Project*

- **Developing games** in Visual Studio by making use of various objects like Form, Timer, Button etc
- Incorporated **character and background motion** in game using Key Events and suitable functions
- Emulated popular games such as **Flappy Birds**, a simpler version of Super Mario and other similar games

Positions of Responsibility

Events Coordinator | Mood Indigo 2019 *(June '19 - Dec '19)*
Asia's largest college cultural festival | 146,000 footfall | 240+ events

- Conceptualized and organized Mr. and Ms. Mood Indigo talent hunt competition with a **400+ audience**
- Lead a **team of 10+ freshmen**, playing a major role in work allocation and on-ground event handling
- Structured the **event timeline** and assisted in the **invitation and hospitality** of four esteemed judges
- Served as the first point of contact for **20+ finalists** meeting their requirements adequately for the event

Teaching Assistant | CS101: Computer Programming *(Autumn '20, Autumn '21)*
TA for Prof. Raman and Prof. Chaudhari, Dept. of Computer Science

- Taught and evaluated **12 freshmen** through doubt and lab sessions, and interactive **two-way learning**
- **Mentored** and addressed doubts leading students to make a **Lasso Game** build upon OOP concepts

Technical Skills and Certification

- **Financial Modelling, IITB** | Awarded certificate of merit for passing tests and successful completion
  - Computed Balance Sheet, DCF and LBO model for a company on MS-Excel as a part of assessment
- **Analytics Bootcamp, IITB** | Awarded certificate of merit for passing tests and successful completion
  - Performed data cleaning, Model development and evaluation and plots on a dataset of house prices
- **Finalatics** | Currently doing a 2-month long equity training, research and analysis-based program
  - Creating,managing and maintaining a real-time simulated portfolio on BSE 500 listed companies

Programming Languages	Python, C++, Java, C#, VHDL, HTML, SQL, MATLAB
Tools	Quartus Altera, Xcircuits, NGspice, AutoCAD, .NET

Extra-Curricular Activities

Fine Arts

- Awarded **A grade** in **Intermediate** as well as **Elementary** Grade Drawing competition by the GOI
- Completed a two-semester course in Fine Arts conducted by the **National Sports Organization** (NSO)
- Coordinated in the conduct of Kaladarshan, an annual art and craft exhibition, with a footfall of **10,000+**

Others

- Participated in a month-long beginner level **Squash training** programme (Prarambh) at IIT Bombay
- Attended the Cultural School of Music programme at IIT Bombay, acquiring basic **drumming skills**
- Awarded **Certificate of Merit** for **Finance Bootcamp** at the Non-Technical Summer School, IITB