Dhatri Kaushal Mehta | **210070027**
Electrical Engineering | **B.Tech.**
Indian Institute of Technology Bombay | **Gender: Female**
DOB: 30/01/2003

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2025	
Intermediate	CBSE	Ryan International School, Sanpada	2021	97.60%
Matriculation	CBSE	Reliance Foundation School, Koparkhairane	2019	99.40%

Pursuing a **minor** in **Data Science** offered by the Centre for Machine Intelligence and Data Science

SCHOLASTIC ACHIEVEMENTS

- Secured **All India Rank 454** in JEE Advanced examination amongst **1.4 lakh** candidates *(2021)*
- Secured **All India Rank 1310** in JEE Mains examination amongst **11 lakh** candidates *(2021)*
- Among top **300** out of 3 lakh candidates across India in BITSAT, with a score of **382/450** *(2021)*
- Stood **3rd** all over India and **1st** in Maharashtra state in Class 10 CBSE Board exam *(2019)*

KEY PROJECTS

Electrical Engineering Projects

Control Theory Project | *Guide: Prof.Dwaipayan Mukherjee* *(May-July 2023)*

- Gained insights on **multiagent control** and **consensus protocols** by studying **4 research papers**
- Explored themes like consensus algorithms for **double-integrator** dynamics with local interactions
- Understood crucial concept of **agreement protocols** and its applications in **military**, **surveillance** and **sensor networks**, through development of capabilities like formation control, rendezvous etc.
- Formulated **algorithm** to find out if a graph is connected or not, worked on **MATLAB** to confirm understanding of graph theory concepts, such as isomorphism and matrix representation of graphs

Pipelined Processor | *Course Project (Microprocessors)* | *Guide: Prof.Virendra Singh* *(April 2023)*

- Used **VHDL** to design and implement a **6-stage pipelined processor**, **'IITB-RISC-23'**
- Optimized the architecture for performance by including **hazard mitigation techniques**
- Successfully implemented 26 instructions, consisting of **R, I and J type instruction formats**
- **Identified** and **developed** roughly **19 types of components**, like memories, datapath and MUXes

IITB Simple CPU | *Course Project (Digital systems)* | *Guide: Prof. Virendra Singh* *(Nov 2022)*

- Used **VHDL** to design and implement a **Central Processing Unit (CPU)** called **IITB-CPU**
- Designed an **8-register computer system**, which could use **point-to-point communication**
- Clearly defined **30 states**, along with the relevant **control signals** and **select lines** for each state
- **Designed** all components as needed, like **MUX**, **registers** and **Arithmetic Logic Unit (ALU)**

Trainee, IIT Bombay Racing | *Faculty Advisor: Prof. Sandeep Anand* *(July-Dec 2022)*

*The team secured the overall **first position** at the engineering design event held at Formula Student UK (FSUK) 2021.*

- Underwent a **month-long training module** to gain understanding of electrical systems deployed in the Electric Vehicle, which included understanding **Printed Circuit Board (PCB)** functions
- Simulated a blinking LED circuit schematic on **LTSpice** and designed a PCB for it on **Eagle CAD**
- Gained deep understanding of PCBs used to control switching of **relays** between **motor-controller** and **400V accumulator** for safe pre-charging, charging and discharging of motor-controllers
- Received training in skills such as **soldering**, **crimping**, **data-sheet reading** and **routing** PCBs
- Successful transition from trainee to the role of **Junior Design Engineer** for Electronics and System Integration Subsystem; subsequently, worked on **PCB testing** and **inventory reconciliation**

Machine Learning Projects

Face Recognition Model | *Summer of Code Project* | *Web n Coding Club* *(May 2023-Present)*

- Worked on project **'Find Me Out'** to develop **face recognition model** using deep learning tools
- **Collected data** of more than 400 images of 4 public figures, performed **data augmentation** on it
- Implemented a convolutional neural network, using **TensorFlow 2.0's keras-vggface** in **Python** that could correctly identify a face in a photo in less than 2 seconds, with more than **95% confidence**
- Tailored the **pretrained model** to the project dataset, by training on 6,147 of the total 23.5 million+ parameters, hence applying concepts of **transfer learning** and **fine-tuning**

Sentiment Analysis Project | *Course Project (Minor)* | *Guide: Prof.Biplab Banerjee* *(April 2023)*

- Analyzed and interpreted a 2019 IEEE paper **"Evaluation of Deep Learning Techniques in Sentiment Analysis from Twitter Data"** and implemented a deep learning model based on it
- Classified tweets as positive, negative or neutral, using **Long Short-Term Memory** neural network
- In **Python-Keras** framework, **modified data** by removing urls, emojis etc. for better performance
- Used **GloVe word embedding model** with its pretrained vectors, and finally ran the model on test data to obtain results to validate accuracy between predictions and real values

Stock Price Predictor | *Course Project (Minor)* | *Guide: Prof. Amit Sethi* *(Nov 2022)*

- Used a Machine Learning model to **predict the stock prices** of the shares of 3 companies
- Used **Python-Keras** framework to implement a **Long Short-Term Memory (LSTM)** based recurrent neural network, capable of learning long-term dependencies, especially in time-series data
- Trained the **LSTM neural network** with a **dense layer**, tanh activation and **Adam optimiser**
- Obtained successful results on test data; authored report in **IEEE format**, summarizing the project

Finance Projects

Understanding Credit Score Algorithms | *FinSearch Project* | *Finance Club* *(July 2023 - Present)*

- Researched extensively to understand the positive and negative **drivers** of Credit Score Algorithms
- Learnt about techniques used to create and validate credit scoring models and **role of AI** in it
- Identified sources of **bias** in credit scoring models and avenues to **mitigate such risks**
- Determined challenges faced by **P2P lending firms and fintechs,** identified how such entities analyse customer data and leverage it to reduce credit risk in loans extended to identified borrowers

Financial Market Experience Program | *Finlatics Live Project* | *E-cell* *(Jan-June 2023)*

- Successfully completed live project on **Financial Markets and Investment Banking**
- Learnt and applied basic knowledge of **financial markets** through AI-driven games and quizzes
- Practised **portfolio management** on a real-time stock simulator, based on **BSE 500 index**
- Authored an **equity research** on 2 companies and **peer-reviewed** research of fellow participants

TECHNICAL SKILLS

Programming Languages	Python, C++, MATLAB, Embedded C, VHDL
Libraries	NumPy, Pandas, MatPlotLib, OpenCV, TensorFlow, Keras, OS
Softwares and Tools	LaTeX, Quartus, Eagle, LTSpice, Keil, Flip, Realterm, Github

EXTRACURRICULAR ACTIVITIES

- Completed **'Machine learning introduction for everyone'** course by IBM and **'Machine learning specialization'** (3 courses) by Stanford University on Coursera *(2022-23)*
- Currently completing **'Deep learning specialization'** (5 courses) by Stanford University on Coursera; topics include Neural Networks, Advanced Algorithms, Structuring ML Projects, etc. *(2022-23)*
- Developed a **Python-based** bot with **user-specific capabilities** in Visual Studio Code as part of **'Codewars'**, a prominent institute-level hackathon *(2022)*
- Completed **one year** of training in **athletics** under National Sports Organisation **(NSO)** *(2021)*
- Awarded merit certificate in the prestigious **Homi Bhabha Bal Vaidnyanik Competition** *(2018)*
- Served for one year as a **Vice Captain** in the school council of Reliance Foundation School *(2017-18)*
- Secured **third** position in interschool competition on 'Nurturing Talent for Nobel Laureatism' *(2017)*
- Won a zonal silver medal and merit certificate in International English Olympiad by securing **10th** rank at the **international level** *(2017)*