Saumya Bhavesh Sheth | **210020120**
Mechanical Engineering | **B.Tech.**
Indian Institute of Technology Bombay | **Gender: Male**
DOB: 07/10/2003

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2025	
Intermediate	HSC	Khar education society's Junior College of Science	2021	98.00%
Matriculation	ICSE	P.G. Garodia School(I.C.S.E)	2019	97.00%

Pursuing a **minor** degree in the **Center for Machine Intelligence and Data Science (CMInDS)**

Scholastic Achievements

- Achieved a **Change of Branch** to the department of **Mechanical Engineering** (B.Tech) among **30** out of **1300**+ freshmen owing to excellent academic performance [2022]
- Achieved a perfect **AA** grade in **5** courses in the freshmen year for stellar academic performance [2022]
- Secured All India Rank **1504** in **IIT-JEE Advanced** 2021 among more than **0.15 million** aspirants [2021]
- Achieved All India Rank **897** (**99.93 %ile**) in JEE Mains exam amongst **1.2 million** candidates [2021]
- Awarded the prestigious Kishore Vaigyanik Protsahan Yojana (**KVPY**) fellowship by IISc, Bangalore [2021]

Professional Experience

Data Analytics Internship | Impact Guru Technology Ventures Pvt Ltd [Dec 2022 - Jan 2023]
Impact Guru is an organisation providing health care crowdfunding

- Conducted research in support of various projects by interpreting data, analyzing results using statistical techniques, various tools of Microsoft Excel like **pivot tables** and performed **Exploratory Data Analysis**
- Collected and analyzed data on doctors' fields of specialization and patient treatments for company campaigns, also provided a dashboard to monitor the status and progress of parternship with various hospitals

Projects

IPL Data Analysis and Winner prediction | CMInDS, IIT Bombay [Oct 2022 - Nov 2022]
Prof. Manjesh K. H., Prof. Amit Sethi | Course Project | DS203

- Conducted in-depth **Exploratory Data Analysis** to uncover standout teams, players and valuable insights
- Clustered players into different categories based on various performance metrics by **K-Means clustering**
- Implemented **Grid Search CV** with **5-fold cross-validation** on **Random forest regressor, XG Boost regressor, Extra trees regressor**(got the best accuracy) and **Neural networks** to predict the final scores
- Curated **Logit, SVC, Decision tree classifier**, Random forest & XG Boost for predicting winner of the match, compiled the detailed observations, results and conclusions in a IEEE format 9 page report

Stock prediction using CNN & LSTM Models | CMInDS, IIT Bombay [Mar 2023 - April 2023]
Prof. Manjesh K. H., Prof. Biplab Banerjee | Course Project | DS303

- Developed 3 CNN & 2 LSTM models for NIFTY 50 prediction, Univariate **encoder-decoder Convolutional LSTM** demonstrated exceptional accuracy (**RMSE: 0.0349**) - the most accurate model
- Used **walk-forward validation** with historical NIFTY data, Univariate CNN model with previous 1 week's data for speedy execution (**RMSE: 0.0350**), included **max pooling** in CNN for efficient feature extraction
- Employed **LSTM** with forget, input, & output gates, introduced **Convolutional LSTM** for direct feature extraction **avoiding vanishing gradients** which improved feature learning from sequential input

Algorithmic Trading and Stock Price Prediction | Winter in Data Science [Dec 2022 - Jan 2023]
Analytics Club, IIT Bombay

- **Paired Switching**: Simulated a portfolio from scratch which purchases stocks based on the paired switching strategy and achieved **25%** average annual returns backtested on 10 years of actual stock market data
- **Momentum Trading**: Simulated a portfolio from scratch which purchases stocks based on the momentum trading strategy and achieved **20%** average annual returns backtested on 10 years of stock market data
- Implemented a CNN-LSTM model to predict Tata motors stock prices, achieving a high accuracy with **R2 Score** of **0.9473**, the model demonstrated good precision with Mean Absolute Error (**MAE**) of **0.047**

Image Stitching to create Panorama [Oct 2023 - Nov 2023]
Prof. Ajit Rajwade | Course Project | CS 663 - Digital Image Processing
- Developed an image stitching algorithm utilizing feature extraction techniques including **SIFT** (Scale Invariant), **SURF**, and **ORB** for robust feature detection and brute force for key point matching
- Implemented **RANSAC** algorithm for the construction of **homography matrix**, ensuring accurate image alignment & minimizing the impact of outliers in image stitching, achieved an average accuracy of **95%**

Data Structures and Algorithms | Summer Of Science [Jun 2023 - Ongoing]
Summer Learning Project | Math & Physics Club, Institute Technical Council, IIT Bombay
- Understood data structures in **C++** such as Stacks, Arrays, Queues, Linked List, Binary Trees and Graphs
- Learnt and documented about **Greedy Algorithms, Graph Traversal Algorithms, Dynamic Programming** and Sorting Algorithms like Merge Sort, Quick Sort, Bubble Sort and Insertion Sort
- Made a File Zipper using **Huffman coding algorithm** for compressing and decompressing files

Uncertainty Estimation for Classifying Medical Images | Research Project [Oct 2023 - Nov 2023]
Prof. Amit Sethi | Course Project | DH307 - RnD Project
- Leveraged **EDL** with **Dirichlet distributions** & EMSE loss to quantify classification uncertainty in a LeNet-5 architecture, overconfidence in softmax, enabling robust uncertainty estimation for o.o.d samples
- Employed **relu_evidence** for network logits to evidential mass translation and direct Dirichlet parameter prediction, enhancing uncertainty calibration, error identification, and model interpretability

Positions of Responsibility

Technical Mentor : Summer Of Science | Maths & Physics Club, IIT Bombay [Jun 2023 - Ongoing]
- Guided and assisted **7** students for the project in the field of **Algorithmic Trading** and aided their learning by providing relevant resources, clarifying conceptual difficulties and mentoring them throughout

WiDS Mentor | Analytics Club, IIT Bombay [Dec 2022 - Jan 2023]
- Mentored **15+** students for the project **Stock Market Prediction using Time Series Forecasting**
- Guided the mentees in clearing their conceptual doubts, compiled good resources for them

Interview Coordinator | Placement Cell, IIT Bombay [Nov 2022 - Dec 2022]
- Coordinated with a team of **250+** members to effectively manage the interviews of **1800+** students
- Assisted in conducting tests for **10+** firms and handling student queries during the placement interviews

Technical Skills

- **Programming Languages :** C++, Python, HTML, CSS, Javascript, PHP, MySQL, Solidity
- **Frameworks, Libraries :** Numpy, Pandas, Matplotlib, Seaborn, OpenCV, sklearn, Keras, TensorFlow, PyTorch, SciPy bootstrap, Django, React, Angular JS
- **Other Technical skills :** Blockchain, DeFi, Git, Latex, Ansys, SolidWorks, AutoCad, Matlab, Excel

Courses Undertaken

- **Math & Computer Science** Programming for Data Science, Computer Programming and Utilization, Linear Algebra, Calculus I, Calculus II, Differential Equations, Introduction to Machine Learning, Introduction to Numerical Analysis, Fundamentals of Digital Image Processing
- **Inter-Departmental** Economics, Quantum Physics & Application, Basics Of Electricity & Magnetism, Introduction to Electrical & Electronics Circuits

Extracurricular Activities

- Completed month long courses on **Entering Financial markets**, **Tinkering bootcamp** and **Game theory** under Non Technical Summer School and Technical Summer School in Learner's space [2022]
- Completed a course on **Neural Networks and Deep Learning** on Coursera [2023]
- Made,manoeuvred **Radio Controlled Plane** for the competition by **Aeromodelling** Club,IITB [2022]
- Made a **manually controlled bot** for XLR8 competition by **Electronics** & **Robotics** Club,IITB [2022]
- Underwent a year long professional training under **National Sports Organisation**, IIT Bombay [2021-22]
- Was **Events Coordinator** for **Techfest** and **Marketing Coordinator** for **E-Cell** IITB [2022]
- Trekked Kalsubai which is the **Highest peak of Maharashtra** with an elevation of **5400 feet** [2021]
- Ideated and **pitched** our **start-up** idea, made a **BMC** for the same in the EnB Buzz Competition [2021]
- Awarded the Certificate of Appreciation to work for the cause and **welfare of the Handicapped** [2015]
- Volunteered as a writer for **ICSE Board Exams 2018** for special needs students of Garodia School [2018]
- Completed **7+** hour of **Python** & **Data Science** Bootcamp held by the **School of Data Science** [2022]