



Satwik Murarka
Chemical Engineering
Machine Intelligence and Data Science
Indian Institute of Technology Bombay

190020101
Dual Degree (B.Tech. + M.Tech.)
Gender: Male
DOB: 20/01/2001

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2024	■

Pursuing a **Minor** degree from the department of **Computer Science and Engineering**, IIT Bombay

SCHOLASTIC ACHIEVEMENTS

- Secured All India Rank **943 & 1498** in JEE Main and JEE Advanced | Recipient of **KVPY Fellowship** by the Government of India
- Awarded **AP grade (top 1%)** for exceptional performance in courses: **Computational Methods Lab & Intro to Network Analysis**

PROFESSIONAL AND RESEARCH EXPERIENCE

RT Prediction in LC-MS <i>Master's Thesis</i> [Mar '23 – Present]	<ul style="list-style-type: none">Developed 3 models: Graph Neural Networks, 1D-CNN & DNN to predict retention time for small moleculesAdopted transfer learning to predict RT in other chromatographic system with lesser number of metabolitesObtained results on 4 datasets and surpassed state-of-the-art results on MassBank data with 300 moleculesBuilding a metabolic reaction network-based annotation system in Python for more accurate annotations
Dr. Reddy's Labs <i>Data Science Intern</i> [May '22 – July '22]	<p>Received a Pre-Placement Offer for excellent analytical work and strong work ethic shown during the internship</p> <ul style="list-style-type: none">Worked in a team of 8 in the Advanced Analytics group to deliver insights from data to the Rx Marketing teamUtilized pricing data of around 150 launches to predict generic launch price of 10+ branded drugs till 6 monthsVisualized 10+ features with boxplot, histograms & preprocessed data by log transformation & outlier cappingApplied Stacking Regressor ensemble with SVM, Random Forest & Multiple Linear Regression as base modelsAttained an error under 15% with the output prices being useful in bid price planning & business case revision
MyHashCode <i>Software Developer</i> [Jun '21 – Aug '21]	<ul style="list-style-type: none">Designed components in ReactJS for the user dashboard of BigBandTheory, an NFT based startup for artistsCollaborated in a team of 5 to build the HLD of BigBandTheory and assisted in development of the login pageOptimized User Interface components for MyHashCode and acquired experience in development using Agile

KEY PROJECTS

Query Focused Text Summarization [Mar '23 – May '23]	<p><i>Deep Learning for NLP Course Project Guide: Prof. Pushpak Bhattacharya, Department of Computer Science</i></p> <ul style="list-style-type: none">Devised a pointer-generator network, using attention mechanism for generating the summary given a queryExplored GloVe, Word2Vec for initial word embeddings & used DeepMind Q&A data with 97,000 documentsCreated a web-app using Streamlit for displaying the text summaries and obtained a ROUGE1 score of 0.21
Credit Risk Detection <i>Self-Project</i> [Nov '22 – Dec '22]	<ul style="list-style-type: none">Analysed credit data of a German bank to identify high-risk loan applications to decrease loan default ratesPerformed EDA on 9 features to identify trends & conducted chi-squared test for correlation b/w featuresUsed SMOTE oversampling to balance the dataset & obtained an F1 score of 0.80 using the XGBoost modelDeveloped a web-app in Flask and deployed the machine learning model on Render to showcase the results
Image Colorization using GANs [Mar '22 – May '22]	<p><i>Advanced Machine Learning Course Project Guide: Prof. Sunita Sarawagi, Department of Computer Science</i></p> <ul style="list-style-type: none">Implemented a paper on DCGAN with U-Net, on the Places365 dataset, using PyTorch for image colorizationExtended the paper to overcome the issue of mode collapse by utilizing Wasserstein loss and its adaptationsEvaluated 3 models with PSNR & MAE metrics & found WGAN with gradient penalty as best with a 6.29 PSNR
Online Shoppers Purchase Prediction [Oct '21 – Dec '21]	<p><i>Programming for Data Science Course Project Guide: Prof. Amit Sethi, Department of Electrical Engineering</i></p> <ul style="list-style-type: none">Executed EDA & Hypothesis Testing to find patterns in data, scrutinising customers to personalize marketingCondensed features using PCA, comparatively analysed 4 models & tuned hyperparameters for better modelAchieved a maximum accuracy of 96.26% and an F1 score of 0.96 with Random Forests as the best classifier

SKILLS AND EXTRACURRICULAR ACTIVITIES

Technical Skills	<ul style="list-style-type: none">Skills: C++, Python, SQL, PyTorch, Keras, JavaScript, ReactJS, Apache Spark, MATLAB, Git, Excel, HTML, DockerCourses: ML, Data Science, RL, Probability & Statistics, DL for NLP, DSA, Computer Networks, Game Theory
Finance	<ul style="list-style-type: none">Achieved Gold Level in WorldQuant Brain Challenge & secured top 5% in Stage 1 of Global Alphathon 2022Worked as a part-time research consultant at WorldQuant Brain building long-short quant trading strategiesParticipated in the Limestone Data Challenge organized by Tower Research Capital and the Finance Club IITB
Leadership and Mentorship	<ul style="list-style-type: none">Part of a 30-member council in Hostel 9 as Web Secretary & developed the frontend for the hostel websiteWorked as Media & PR Coordinator for Abhyuday, anchoring events & mentoring students of other collegesGuided 4 mentees to learn about Deep Learning and build an Image Captioning project in Seasons of Code
Workshops and Certifications	<ul style="list-style-type: none">Completed Finance, Financial Modelling, Data Analytics and Design Bootcamps during the Learners Space 2020Accomplished the online certification, Deep Learning A-Z: Hands on Artificial Neural Networks on Udemy
NCC	<ul style="list-style-type: none">Successfully completed a year long training under NCC and attended a 10-day Annual Training Camp (ATC)Volunteered in Career Counselling Session at BMC schools during ATC & spread awareness to 100+ students
Miscellaneous & Interests	<ul style="list-style-type: none">Learned French for 3 years & received a gold medal in school at an Olympiad by the French Embassy in IndiaFootball, F1 & Cricket follower Enjoys playing badminton, video games and FPS titles particularly Valorant