Garweet Sresth | **190070023**
Electrical Engineering | **B.Tech.**
Indian Institute of Technology Bombay | **Gender: Male**
DOB: 11/02/2002

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2023	

Pursuing a **Minor** in **Computer Science & Engineering**

Scholastic Achievements

- All India Rank **382** in JEE Main 2019 | All India Rank **625** in JEE Advanced 2019 | **KVPY** Scholar *(2019)*
- Secured an **AP** grade for exceptional performance in Electromagnetic Waves awarded to **1 out of 169** students *(2021)*
- Awarded the Narotam Sekhsaria Foundation Undergraduate Engineering Scholarship *(2023)*

Publications

Unlabelled Sensing With Priors *Statistics and Machine Learning*
- **Garweet Sresth**, S.Mulleti and A. Rajwade, "Unlabelled Sensing With Priors: Algorithm and Bounds" (In preparation)

Leveraging Segmentation to Improve Medical Image Registration *Deep Learning for Medical Imaging*
- S. Almahfouz Nasser, M. Meena, **Garweet Sresth** and A. Sethi (Pre-print submitted to the **IEEE** Journal of Biomedical and Health Informatics)

Micro-Doppler Parameter Estimation Using VMD With Finite Rate of Innovation
- S. Sharma, A. Girish, D. Jeff, **Garweet Sresth**, S. Bhalerao, V. M. Gadre, C. H. Srinivas Rao and P. Radhakrishna, 2022 **IEEE** International Conference on Signal Processing and Communications (SPCOM), Bangalore, India, 2022

Research and Work Experience

Deep Learning for Quantitative Finance | *Prof. P. Balamurugan, Academic Project* *(Sept-Nov 2022)*
- Trained a multivariate **Probabilistic Forecasting** model based on **Transformer** architecture on **8 stock price series**
- Conducted comprehensive experiments to assess the model's robustness and performance by analyzing the impact of varying historical input lengths and prediction horizons on the **Continuous Ranked Probability Score** (CRPS) metric

Posterior Estimation in Bayesian Neural Networks | *Markus Heinonen, Aalto University, Finland* *(May 2023)*
- Formulated the problem statement after analyzing the latest advancements in Variational Inference with Normalizing Flows
- Modelled the latent variable distributions within Rank-1 Node BNNs using **Normalizing Flows** for a richer description
- Derived the expression for the **Evidence Lower Bound** (ELBO) in terms of the initial distributions for efficient optimization

Unlabelled Sensing with Priors | *Prof. Ajit Rajwade, B.Tech Project* *(Aug 2022-Present)*
- Developed an algorithm for regression vector estimation from **sparsely permuted data**, leveraging additional priors to consistently outperform the traditional **Robust Regression** method across diverse permutation and noise levels
- Employed advanced **concentration inequalities** from Linear Algebra to derive an upper bound on the estimation error

Segmentation of Brain MRI Volumes | *Prof. Amit Sethi, Medical AI Lab, IIT Bombay* *(Aug-Feb 2022)*
- Executed **35**-classes segmentation of Brain MRI volumes in the OASIS dataset by partitioning each volume into **8** non-overlapping sub-volumes and deploying independent **3D UNets** for enhanced accuracy and lesser memory requirements
- Achieved outstanding metrics, with an average **Dice score** of 0.96 on the training set and **0.95** on the validation set

Key Projects

Automatic Speech Recognition | *Prof. Preeti Rao, Course Project* *(Autumn 2022)*
- Implemented an ASR system using **Gaussian Mixture Model** with **Hidden Markov Model** to recognize **10** command words and obtained a training accuracy of 89% and a test accuracy of **82%** on the Google Speech Commands Dataset

Video Data Compression and Recovery | *Prof. Ajit Rajwade, Course Project* *(Spring 2022)*
- Implemented an algorithm capable of accurately reconstructing individual frames from a coded snapshot of video
- Performed reconstruction for each 8×8 patch using **Orthogonal Matching Pursuit** (OMP) with the 2D DCT basis
- Obtained a mean squared reconstruction error of less than **4.5%** from a coded snapshot involving upto **7** video frames

Video Denoising | *Prof. Ajit Rajwade, Course Project* *(Spring 2022)*
- Implemented a denoising algorithm capable of removing mixed noise based on the Low-Rank Matrix Completion theory
- Achieved an impressive average frame-wise **PSNR** of **23.63** on a synthetically-corrupted video comprising **300** frames

Positions of Responsibility

Undergraduate Teaching Assistant | MA 109: Calculus 1 *(Oct-Dec 2022)*
- Conducted tutorials for a batch of **50**+ students, clearing their course-related doubts and fostering active problem-solving

Placement's Interview Coordinator | Placement Cell, IIT Bombay *(Oct-Dec 2022)*
- Coordinated in a team of **250**+ members for interviews of **2000**+ students and assisted in conducting tests for **20**+ firms

Extracurriculars

- Represented IIT Bombay as **one of two** Indian students during an **exchange** program at Aalto University, **Finland** *(2023)*
- Successfully completed one year of social service under **National Service Scheme** (NSS) *(2019)*
- Attended the prestigious Vijyoshi Camp organized by the Indian Institute of Science Education and Research, Bhopal *(2018)*