Pranjal Gupta | **190010053**
Aerospace Engineering | **B.Tech.**
Indian Institute of Technology Bombay | **Gender: Male**
DOB: 7/25/2001

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

*Pursuing **Dual Minor** in **Computer Science and Engineering (CSE)**, and **Artificial Intelligence and Data Science (C-MinDS)***

SCHOLASTIC ACHIEVEMENTS

- Ranked **6th** among **73 students** in B.Tech Aerospace Engineering with **12 AA** and **11 AB** grades in four semesters ['19]
- Awarded certificate of **High Distinction** for **3 consecutive years** in the Australian National Chemistry Quiz (**ANCQ**)['14, '15, '16]

INTERNATIONAL PROJECTS AND CONFERENCES

Hokkaido University, Japan | *Atmospheric Density Deduction using Machine Learning* [May '21 – Jul '21]

Undergraduate researcher at the Computational Fluid Mechanics Laboratory, Mechanical and Aerospace Engineering

- Predicted and reconstructed **mission trajectory** using **Gaussian Process Regression** and **trajectory analysis** code respectively
- **Optimized** for the reconstructed trajectory with the predicted trajectory using a **Bayesian approach** to deduce density

University of Pennsylvania | *Decoding Visual Cortex Data on Visual Stimulus* **|** *Neuromatch Academy* [Jul '20]

- Selected among **1500+** applicants to attend summer school on **Computational Neuroscience** based on extensive applications
- Predicted **stimulus contrast values** in mice trials by deploying **LogReg, LDA** and **Random Forest** classifiers on Neuropixel data

National Conference on Small Satellite Technology and Applications (NCSSTA), Trivandrum [Dec' 20]

- Katla V., **Gupta P**. et al. "An Approach to Star Tracker Design for Nano-Satellite Applications" (presented extended abstract)

PROFESSIONAL EXPERIENCE

1stZoom | *Multi-Person 2-D Pose Estimation* [Jan '21 – May '21]

Worked on video-intelligent solutions to identify dangerous actions on Indian roads through CCTV images

- Developed an end-to-end solution to classify poses as attacking/non-attacking via **object detection** and **pose estimation**
- Identified humans using **Single Shot Detector** followed by detecting pose keypoints via **PoseNet library** with **71%** confidence
- Partitioned keypoints by performing **KNN clustering** with **K-D trees** using a **custom confidence-weighted** distance metric

KEY PROJECTS

Stock Market Prediction using Sentiment Analysis | *Intro to ML Course Project, Guide: Prof. Abir De* [Jan '21 – May '21]

- Trained an **LSTM** model on **Reddit world news data** to predict movement of Dow Jones Industrial Average (**DJIA**) stocks
- Performed **comparative analysis** of LSTM with **Random Forest** and **LogReg** classifiers, achieved **88% precision** and **85% recall**

Scenario Approach to Robust Optimization | *Prof. Debasish Chatterjee, Systems & Control Engineering* [May '21 – Present]

- Reviewed literature on robust optimization under **uncertain constraints** with infinite uncertainty sets (**semi-infinite programs**)
- Surveyed the application of the scenario approach in **mathematical finance**, specifically **robust portfolio optimization**

Self-Supervised Domain Adaptation| *Prof. Biplab Banerjee, Center of Studies in Resources Engineering* [May '20 – Dec '20]

- Generated **pseudo-labels** of unlabeled images using a Domain Adversarial Neural Network (**DANN**) and **Siamese network**
- Achieved **99%** accuracy on source domain images and **65%** accuracy on target domain images on the **VisDA 2017** dataset

POSITIONS OF RESPONSIBILITY

Department Research Coordinator (Aerospace) | *Undergraduate Academic Council, IIT Bombay* [Apr '21 – Present]

*Regularly adopting strategies to bridge the gap between research enthusiasts and professors impacting **5000+** students*

- Canvassed and **launched** the Summer Undergraduate Research Program with a **300% y-o-y increase** in department projects
- Coordinated the **Virtual Department Lab tour** with **10+ professors** to showcase experiments and introduce the department
- Organized **Sophomore 101** branch induction session on department opportunities with **70+** attendees and **10+** speakers

Subsystem Head, Guidance Navigation & Controls, STADS | *Student Satellite Program, IIT Bombay* [Feb '20 – Present]

A CubeSat-compatible Star Tracker-based Attitude Determination System (STADS) to be tested onboard the PS4-Orbital Platform

- Leading an interdisciplinary team of **10** undergraduates to develop and test Attitude determination framework in **MATLAB**
- Executed a **3-step recruitment** process to select **11** out of **100+ applicants** evaluating their technical ability and teamwork
- Conceptualized the **Design Review** of the system for **design framework formulation** and **reduced design investment**

Department Academic Mentor (Aerospace) | *Department Academic Mentorship Program, IIT Bombay* [Apr '21 – Present]

- Part of a **23-membered team** selected among **30+ applicants** based on extensive peer reviews and interviews
- Monitored the academic performance of **8 second-year students** providing academic guidance and general counsel

EXTRACURRICULAR ACTIVITIES

TECHNICAL	• Secured **Gold** medal in the Astro-Sat PS at **Inter-IIT Tech Meet 9.0** among **60+** competitors across **10+** IITs • Conducted workshops on Git/GitHub and GSoC as the **Convener of the Web and Coding Club**, Institute Technical Council
FINANCE	• Completed **Finance bootcamp** and **Finance 101** under Learner's Space offered by Finance Club, IIT Bombay • Completed the course **Portfolio Construction and Analysis with Python** covering tools like Max Drawdown to analyse returns