



Yash Rampuria
Mechanical Engineering
Indian Institute of Technology Bombay

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B.Tech.
Gender: Male
DOB: 18/05/2003

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2025	
Intermediate	CBSE	Delhi Public School Bengaluru South	2021	98.20%
Matriculation	CBSE	Delhi Public School Bengaluru South	2019	95.30%

Pursuing two Minor Degrees in **Data Science & Artificial Intelligence** by C-MInDS and **Aerospace Engineering**

SCHOLASTIC ACHIEVEMENTS

- Secured **Department Rank 8** out of **200+** students | Attained an SPI of **9.7/10** in the 4th semester [2023]
- Awarded **AP (Academic Proficiency)** grade in **Fluid Mechanics Lab**, given to the **top 1%** of the batch [2023]
- Attained **99.93** percentile in the **JEE Main** Examination among **1.2 million+** candidates all over India [2021]
- Attained **99.27** percentile in the **JEE Adv.** Examination among **150,000+** candidates throughout India [2021]

PROFESSIONAL EXPERIENCE

Axisrooms - Hotelogix | Revenue Management | *Machine Learning Intern* [May'23 - Jul'23]

Awarded a **Letter Of Recommendation** for outstanding work in developing a model for forecasting hotel occupancy

- Implemented a new model with **30%** lesser MAPE and optimized it by choosing parameters with the lowest AIC score
- Achieved **81% accuracy** by scrutinizing XGBoost, Prophet, ARIMA, RNNs (LSTM) and their KPIs to select the best
- Strategised the use of **important covariates** including season, day of the week, holiday info, location and amenities

Ernst & Young | Technology Consulting | *Data Analysis and Generative AI Intern* [Jun'23 - Jul'23]

- Devised a **60%** accurate strategy to use **OCR** and **NLP** for classifying Statements Of Work / RFPs based on penalties
- Programmed PDF data pre-processing and **feature extraction** using embeddings to train a **SVM** classifier in **sklearn**
- Analyzed the core concepts of **Generative AI** and Large Language Models to use a chatbot for classifying documents

ENGINEERING EXPOSURE | TECHNICAL PROJECTS

Design Engineer - Driverless Perception | IITB Racing | *Guide: Prof. Sandeep Anand* [Mar'22 - Present]

Heading the **Computer Vision** division in a team of **70+** students representing **India** as the **1st** and **only** driverless electric racecar contingent among **100+** teams to work on a vehicle worth **£100k** at IMechE Formula Student AI, UK Formula Student Artificial Intelligence '23 - Silverstone, UK

- Built a **ROS** integrated codebase on **Linux** to run a fully autonomous racecar in an unpredictable and **random** track
- Integrated the car with **LiDAR - Camera - IMU** sensor fusion technology to make the system **robust** and redundant
- Simulated Perception - Localization and Mapping - Path planning and Controls on **CarMaker** by **IPG - Automotive**
- Analysed the global **Level 4** driverless market for a **Business Plan Pitch** and prepared an AV **Design Report Paper**

Results and Impact

- Achieved **22% higher** accuracy in the depth estimation pipeline by formulating a depth-bounding box height curvefit
- Reduced inference time from **100ms to 7ms** by building a C++ **TensorRT** engine for object detection using **YOLOv5**
- Decreased latency by **600%** by implementing a **Monocular** depth estimation algorithm using **Perspective-n-Point**
- Optimized a **ResNet** model for **Feature-Point Extraction** by implementing **parallel data** transfer on **CUDA** for Jetson
- Implemented feature detection/matching algorithms using **SIFT** and Perspective Transformation to triangulate depth
- Improved object classification by **fine-tuning** and devising a weighted loss function accounting for **class imbalance**

Research and Testing

- Collected data of **5k+** traffic cones to train models/algorithms and test their **robustness** and **safety** in edge conditions
- Researched **PID control**, CAN-bus, Kalman filter, race-line optimization, backpropagation, regression and overfitting
- Coded Image processing mechanisms including lane extraction, **Gaussian/Canny** edge detection and **Morphology**

AI - IoT Hackathon | Indo-Japan Industry Summit | *IITB Research Park & Nedo Japan* [Jan'23 - Feb'23]

Supermarket **digitization** competition using groundbreaking **AI** solutions to locate misplaced items for swift rectification

- Awarded the **1st Prize** worth **60k** for on-site research of **3** stores, best business model and computer vision strategy
- Proposed **25%** higher profits by devising a solution to detect and classify misplaced items using **YOLOv5 - edge AI**
- Showcased the framework leveraging use of **RFID** alerts and monitoring systems to a panel of **CEOs** and **AI experts**

Road Accident Prevention | Seasons of Code '22 | Web and Coding Club, IIT Bombay [Apr'22 - Jul'22]

Deep Learning / Convolutional Neural Network project to improve **road safety** by detecting and alerting sleepy drivers

- Implemented a model using **Keras** which alerts the driver when eyes close with confidence > **0.8** for a certain time
- Built the CNN with **Adam** optimizer and Categorical **Cross-Entropy** loss to classify between open and closed eyes
- Extracted live images to detect a face and estimate its bounding box using **Haar Cascade Classifier** with **OpenCV**

ML for Trading | Data Science Course Project | Prof. Amit Sethi [Oct'22 - Dec'22]

Machine Learning project to develop a trading bot by analysing previous year market data after **EDA** and data cleaning

- Explored ML models used for classification in trading and attained **57% validation accuracy** using XGBClassifier
- Developed a **frontend** in PyGame for the stock trend predictor to input firm name and analyse the **market direction**

Computational Fluid Dynamics | Optional Lab Course Project | Prof. Neeraj Kumbhakarna [Mar'23 - Apr'23]

Simulation and in-lab research of flow around a cylinder using mixing length model for **2-D Navier Stokes** equations

- Awarded a **grade upgrade** for being one among **4 out of 230+** students for **exemplary** simulations and project work
- Achieved **86%** accuracy for coefficient of pressure-angle plot compared to experimental values in recirculation zones
- Examined in depth flow fields of turbulent and laminar flow separation, **D'Alembert's Paradox** and **Vortex Shedding**

General Electric-9X engine analysis | Propulsion Course Project | Prof. Krishnendu Sinha [Mar'23 - Apr'23]

Real cycle component wise **turbofan** engine analysis to calculate thrust and **TSFC** of GE9X using actual parameters

- Achieved **88%** accuracy compared to specified cruise values in calculation of fuel efficiency for **choked nozzle** flow
- Researched **Fanno** flow for **scramjet** engine combustor analysis and flow choking in ducts longer than critical length

Team Member - Airframe Division | Rocket Team, IIT Bombay [Feb'22 - Apr'22]

Team of 30 students making high power rockets under the guidance of IITB professors for Spaceport **America** cup '23

- Simulated a 39.5 cm long and 2.04 cal rocket model and achieved **Mach 0.22** with apogee **246 m** in **OpenRocket**
- Conducted structural analysis of fuselage and rocket fin **load cases** to improve damage tolerance and **reduce failure**
- Exhaustively studied **aerospace structures**, stresses and materials including carbon fibre and glass fibre composites

POSITIONS OF RESPONSIBILITY

Department Academic Mentor | Student Mentorship Program, IIT Bombay [Jun'22 - Present]

Selected out of **170+** students as a part of a mentorship team through an extensive process of interviews/peer reviews

- Mentoring **6** sophomores, providing counsel and ensuring their academic well being along with holding help sessions
- Helped assuage Branch-Change related concerns in Sophomore - 101, an event of importance to **1400+** students
- Acting as the first point of contact aiding the **communication** between the faculty, institute functionaries and students

Events and Public Relations Coordinator | Entrepreneurship-Cell, IIT Bombay [Jun'22 - Jan'23]

Asia's Largest Entrepreneurship promoting student body recognised by NEN Patronage, UNESCO with **90+** members

- Ideated publicity campaigns for Eureka!, **Asia's largest** Business-model competition with prizes worth **INR 8 million+**
- Provided mentorship to **150+** startups by **30+** VCs and investors by strategizing Founders Garage and **Startup Expo**

TECHNICAL SKILLS

- **Programming Languages** : C++, HTML, \LaTeX , Python, JavaScript
- **Applications** : ROS, OpenRocket, Adobe Premiere Pro, GitHub, Microsoft Office, CUDA
- **Packages/Libraries** : PyTorch, Pandas, TensorRT, Keras, Numpy, OpenCV, PyGame, SciPy

RELEVANT COURSES UNDERTAKEN

Mathematics	Calculus I and II, Linear Algebra, Differential Equations, Numerical Analysis
Computers and Data science	Computer Programming, Programming for Data Science

EXTRA-CURRICULAR ACTIVITIES

Entrepreneurship and Corporate	<ul style="list-style-type: none">• Ranked among top 3 teams of BCG Ideathon out of 40+ students for a business pitch• Pitched a self made Business Model Canvas in EnPro, an entrepreneurship bootcamp
Debate	<ul style="list-style-type: none">• Achieved 2nd position in Dips - Model United Nations '18 in the Human Rights Committee
Social Work	<ul style="list-style-type: none">• Cleared 2+ tonnes of garbage with 300+ volunteers in Versova Beach Cleanup Campaign
Film Making and Acting	<ul style="list-style-type: none">• Awarded the 1st runners up out of 30+ teams in The Times Of India dramatics competition• Attained 50k+ views on Instagram for editing the Mood Indigo Insti Nite aftermovie• Secured 1st prize against 1.4k+ students in Freshiezza Spoof making and 3rd in Ad making
Languages	<ul style="list-style-type: none">• Studied German for 4 years as a language in high school and developed fluency