



Akshat Kumar
Mechanical Engineering
Indian Institute of Technology Bombay
Specialization: Computer Integrated Manufacturing

22B4513
Dual Degree (B.Tech. + M.Tech.)
Gender: Male
DOB: 06/08/2004

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2027	
Intermediate	CBSE	Ryan International School	2022	92.40%
Matriculation	CBSE	Ryan International School	2020	88.60%

Pursuing a **Minor in AI and Data Science** from **C-MInDS**, IIT Bombay

SCHOLASTIC ACHIEVEMENTS

- Obtained _____ out of **1M+** candidates in **Joint Entrance Examination Mains** (2022)
- Secured top _____ percentile in **JEE Advanced** from over **0.16 million** students across India (2022)
- **Highest scorer** in a key assessment in SOM101 course winning a cash prize of **INR 3000** (2023)

PROJECTS

SeDriCa | Unmesh Mashruwala Innovation Cell (UMIC) (Jan'24-May'24)

Technical Team | ITC, IIT Bombay

- Collaborating with 30+ students to develop India's first **Level 5 Self Driving Car** for Indian roads
- Implemented various Machine Learning Models such as **Mask-RCNN** for lane and object detection
- Developed an **Extended Kalman Filter** to fuse GPS and IMU data for accurate state estimation
- Created a ground segmentation algorithm from point cloud using **RANSAC** algorithm for processing

Face Image Generation using DC-GAN and VAE | WiDS (Dec'23-Jan'24)

Project | Analytics Club IIT Bombay

- Developed a generative model pipeline using **GANs** and **VAE** to synthesize realistic human faces
- Improved image quality and texture through **progressive growing of GANs**, **fine-tuned loss functions**
- Evaluated the model using **qualitative metrics**, **visual realism assessments**, and **FID scores**

Personal Portfolio Website | Self Project (Dec'24-Jan'25)

Project | IIT Bombay

- Designed and developed a personalized portfolio website using **HTML**, **CSS**, and **JavaScript**
- Integrated interactive features such as **dynamic navigation**, **responsive design**, and **animations**
- Implemented a clean, modern layout with a focus on **usability**, **visual appeal**, and **functionality**

Web Application for Stock Market Prediction using LSTM | WiDS (Dec'23-Jan'24)

Project Mentor | Analytics Club, IIT Bombay

- **Mentored 20+** students in developing a **model for stock price prediction** utilizing **LSTM** model
- Deployed the model on a **webpage** using the **front-end stack** for stock market insights and analysis
- **Taught ML concepts and stock market dynamics**, guiding them from beginner to advanced levels

Controlling Robotic Arm Using LLM's | Electronics and Robotics Club (Dec'23-Jan'24)

Project | ITC, IIT Bombay

- Integrated **LLM's** with **ROS 2** to control robotic arm by speech and text based inputs
- Configured **ROS 2** and **MoveIt** for precise arm control by communication between LLM and arm
- Implemented and improved **Inverse and Forward Kinematics** strategies for custom path planning

- Utilized **Deep Q-Network algorithm** to train RL agent for **stock selection** and **portfolio management**
- Developed a **reward function to optimize investment returns** within the stock trading framework
- Balanced higher returns with prudent risk management strategies for efficient portfolio optimization

Satellite Image Classification using SDH and GLCM | Course Project

(Mar'23-May'24)

Classification of hyperspectral remotely sensed data | Guide: Prof. B.K. Mohan

- **Implemented a satellite image classification model** using SDH and GLCM texture-based features
- Applied **Random Forest Classifier, DNN, and XGB Boost Classifier** on the **Imagerar dataset**
- Achieved **88% best accuracy** after training on a dataset with **10,000+ images**

Price Prediction Model For Used Cars | ME781, Prof. Asim Tewari

(Sept'23-Nov'23)

Course Project | IIT Bombay

- Developed **price prediction models** for second-hand cars and deployed them on a website
- Trained **Random Forest, Lasso, and Linear Regression** models to predict car prices
- Achieved **Random Forest** as the best model with an **R2 score of 0.87** and **MAE of 2.58**

POSITIONS OF RESPONSIBILITY

Department Academic Mentor | Student Mentorship Program, IIT Bombay

(Ongoing)

- Selected for a 43-member team from over **150 + applicants** through rigorous interviews
- **Mentoring 6 sophomores** in their academic, social, personal and extra-curricular pursuits
- Blog : Tasked with contributing to the mechanical DAMP blog covering **300+** reviews and experiences of courses, projects and internships; reach **700+**, helping students academically through out the branch
- Help Sessions : Compiling and conducting help sessions to **tutor students** in department level courses

Project Mentor | Generative Pre-Trained Transformers Mastery, Season Of Code

(May'24-July'24)

WnCC | ITC, IIT Bombay

- Mentored **20+ students** in developing a simplified version of **OpenAI's GPT and GPT-2**
- Leveraged state-of-the-art techniques like **WaveNet** and **Tokenization** to generate **human-like responses**
- Instructed core concepts like **activations, batch normalization, backpropagation, and encoding**

TECHNICAL PROFICIENCY

Programming: C, C++, Python, Dart , Bash , Git , L^AT_EX**Data Science:** PyTorch, TensorFlow, Keras, Pandas, NumPy**Software and tools:** Colab, Fusion 360, Matlab, Flutter, ROS, Gazebo, Rviz, URDF

COURSES UNDERTAKEN

Maths: Intergral Calculus, Linear Algebra, Differential Equations**Data Science:** Statistical Machine Learning and Data Mining, Automatic Speech Recognition**Key Courses:** Computer Programming and Utilization, Makerspace, Introduction to Quantum Physics, Introduction to Management, Notation and Musical Analysis

EXTRACURRICULARS

- Completed **DSA Learner's Space** course,clearing multiple tests with an 86 percent score. (June'23)
- Played guitar in front of **300+** students in the biggest Musical event of IITB **Surbaahar** (Dec'22)
- Instructed **Guitar lessons** to over **40+** students as a part of **IMLP**, Symphony Music club (August'23)
- Performing live musical pieces in multiple cafe's and restaurants around Mumbai (Ongoing)
- Participated in Plutofiesta, most competitive Intra-hostel football competition of Hostel 9 (Ongoing)