Ajinkya Mawal 22b2439
Metallurgical Engineering & Material Science **B.Tech**
Indian Institute of Technology Bombay Male
ajinkyamawal123@gmail.com DOB: 20/10/2003

Examination	University	Institute	Year	CPI/%
Graduation	IIT Bombay	IIT Bombay	2022-23	8.12

Pursuing **Dual Minor** in **Entrepreneurship**, **Artificial Intelligence** & **Data Science** at CMINDS

TECHNICAL PROJECTS

Falcon 9 Launch Analysis | Self Project [Dec'24]

Implemented Machine Learning algorithms to examine SpaceX Falcon 9 launch data & predict landing success

- Designed an **ETL** pipeline to collect, pre-process, & clean launch data using **API** requests, web scraping
- Performed data wrangling, EDA, and feature engineering to extract success indicators for ML classification
- Developed a Dash & Plotly dashboard for launch success insights & optimized ML pipeline for predictions

Speakspear AI Chatbot | Self Project [Aug'24-Sep'24]

Developed an AI chatbot using GPT-based Bigram Model, leveraging PyTorch and Transformer architecture

- Built a GPT prototype Bigram Model with **1M** parameters using PyTorch, trained on Shakespeare's writings
- Converted Shakespeare's texts into vectors using **Frequency** encoding with further **Positional** encoding
- Utilized multi-head self-attention blocks within Transformer architecture for better context understandings

RL to Optimize Stock Trading Strategies | Finsearch | Finance Club [Jun'24-Aug'24]

Developed RL-based trading strategies using DQN and DDPG, enhancing and optimizing portfolio performance

- Enhanced trading performance by **20%** by leveraging DQN and DDPG on NIFTY50 stock market indices
- Preprocessed **10+** years of historical stock data, engineered features like EMA, RSI and MACD indicators
- Outperformed ARIMA and LSTM models with DQN and DDPG, achieving **15%+** risk-adjusted profitability

Parallel Direction Method of Multipliers | Course Project | Guide: Prof. Balamurgan [Mar'25]

Developed PDMM to enhance multi-block convex optimization, outperforming the existing ADMM algorithm.

- Improved optimization performance, outperforming ADMM in Robust-PCA & Overlapping Group Lasso
- Analyzed the effect of randomized block updates & dual backward steps, for faster & stable convergence
- Reduced iterations by **30%** while maintaining accuracy, efficient approach for structured sparsity problems

Line-Following Bot with Mechanical Arm | Course Project | Guide: Prof.T.K.Bhandarkar [Dec'23]

Designed and simulated the mechanical arm, implemented inverse kinematics for precise pickup-drop actions

- Developed a line-following algorithm, integrating **OpenCV** and **NumPy**, improving path accuracy by **40%**
- Programmed an ESP32 WebSocket server with **Flask**, enhancing servo control & response speed by **50%**

POSITION OF RESPONSIBILITY

Junior ML Engineer | Team Zero Waste [Sep'24]

*Selected from **50+** applicants to develop innovative tech solutions for achieving Net-Zero Waste in campus*

- Developed a robust ML model to classify trash into Six major categories, achieving an overall **84%** accuracy
- Extracted key features: **Haralick Textures**, **SIFT**, Color Histogram, **Hu Moments** and **LBP** Histogram
- Added Deep Features from VGG-16, combined them, used PCA to reduce Dimensionality and Model Size
- Trained and fine-tuned SVC with GridSearchCV,beating famous algorithms by a **10%** Accuracy Benchmark
- Integrated Vision Transformer into CNN architechture, achieving **88%** accuracy on high-resolution datasets
- Utilized **DEEPLABV3** to eliminate noise and improve object visibility, enhancing classification accuracy

EXTRACURRICULARSs

Inter IIT	• Head of Camera Operation which won overall **1st** position competing with all **23** IIT'S • Led the film contingent of **40** members,in rigorous 51-hr & Online Filmmaking Challenge
Venture	• Worked in a team of **2** to build a **D2C** product, securing **2.5** lakh funding after competing with **20+** teams in a highly competitive pool at the pre-incubator programme from DESE
Leads	• Leading a team of **6** to conduct **40+** comprehensive training sessions and impactful live projects at a Global Leadership Program **(ShARE)** on **Circular Economy** principles • Worked in a team of 4 planning, executing various initiatives, mentored **250+** freshmen via workshops into creating projects reaching **50k+** audience to promote Film Initiatives • Ideated and executed **10+** publicity campaigns to increase the registrations for Eureka BMC by **25%**, secured sponsorships from multiple firms for Entrepreneurship initiatives • Mentored **15+** students during Winter in Data Science program, focusing on NLP & LLM