Dhairya Kantawala   23B3321

Mathematics   **B.S.**

Indian Institute of Technology Bombay   **Gender: Male**

DOB: 20/07/2005

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2027	9.65

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

SCHOLASTIC ACHIEVEMENTS

- Awarded an **AP Scholar Award** with **perfect scores** in Calculus BC, Physics C: Mechanics, and Chemistry *('22)*
- Secured All India Rank 1039 in JEE Mains 2023, being in the **top 0.1%** of **1 million+** candidates nationwide *('23)*
- Qualified for Regional Round for **International Finance Olympiad (IFO)** conducted **by IIFM and ET** *('19)*

PROFESSIONAL EXPERIENCE

Mechanistic Interpretability of ML models | *Research Intern: UST, Hong Kong* *(May '25 – July '25)*

- Investigated GPT-2 small hallucination phenomena through mechanistic interpretability by applying **Transformer Lens**, linear probing, causal patching, and Ecco visualization library to dissect and visualize transformer internals

Automating ETL process using NLP | *Winter Intern: Book My Diamond, Mumbai* *(Dec '24 - Jan '25)*

- Streamlined diamond **ETL** with **NLP** and **embeddings**, automating mapping for standardized database integration
- Developed JSON configuration and a Streamlit UI for diamond data, enabling seamless integration and downloads

No-Code Solution for Algorithmic Trading | *Summer Intern: Breakout Investing* *(Jul '24 - Oct '24)*

- Designed and deployed end-to-end architecture for a no-code trading platform, utilising the **LangChain library**
- Utilised **vector embeddings** from **Pinecone**, to re-train a **LLM** generating algorithms from user prompt input

KEY PROJECTS

Eigenvector Mean-Reversion Trading | *Course Project: Prof. Manjesh K Hanawal* *(Apr '25 – May '25)*

- Analyzed **10** years of daily data on **500** stocks using spectral decomposition, eigenvector clustering, and z-scores
- Backtested an investment thesis yielding ***Rs.*35L** profit on ***Rs.*50L** capital (**12.2%** p.a.), beating Nifty 500 by **3%**

Interest Rate Hike Prediction Model | *FinSearch, Finance Club, IIT Bombay* *(Jun '24 - Aug '24)*

- Developed a machine learning model to predict interest rate hikes by scraping news data, building an LSTM model on the daily news data, focusing on **sentiment analysis** and keyword extraction to gauge potential policy changes

Option Trading Strategies | *Summer of Science (SoS), MnP club, IIT Bombay* *(May '24 - Jul '24)*

- Conducted research on option trading strategies using **Option Volatility and Pricing by Sheldon Natenberg**
- Developed expertise in derivative strategies, focusing on **Greeks** and **technical indicators** to get risk and returns

Modern Portfolio Theory Optimization Visualization Dashboard | *Self Project* *(June '25)*

- Built an interactive Markowitz optimizer in **Python/Streamlit**, visualizing **efficient frontier** and capital line
- Backtested via **Monte Carlo** and **CAPM**/Sharpe analysis, displaying **10-year** performance metrics graphically

Time Series Analysis of Sales Data | *Seasons of Code (SoC), WnCC, IIT Bombay* *(May '24 - Jul '24)*

- Specialized in time series analysis with **S-ARIMA** and **LightGBM** to predict sales trends across market conditions

POSITIONS OF RESPONSIBILITY

Institute Academic Coordinator | *Student Support Services, UGAC* *(June '24 - March '25)*

- Acquainted and assisted **over 1,000 undergraduate** students with their course registration process in the institute
- Curated and ran **Mental Health Mondays** on social media to actively promote student well-being and awareness

Teaching Assistant MA105, Calculus | *Department of Mathematics* *(Aug '24 - Nov '24)*

- Assisted **30+** first-year students in weekly **tutorial** sessions through problem solving and **doubt clarification**
- Provided logistical support to professor by evaluating over **100** students and organizing additional help sessions

TECHNICAL SKILLS

Programming	Python, C/C++, LaTeX, Azure, Jupyter Notebook, AWS, Pinecone database, SQL
Data Analysis	Excel, Tableau, Power BI, Data Cleaning, Statistical Analysis, Data Interpretation

EXTRACURRICULAR ACTIVITIES

- Attended Summer School at the **University of Oxford**, gaining global exposure in Business and Entrepreneurship
- Participated in the **British Origami Society Convention**, connecting with 85+ passionate origamists worldwide
- Attended **Pacific Coast Origami Convention (PCOC)** by **OrigamiUSA** to enhance skills and network globally
- Volunteered to teach **Mathematics** to underprivileged students under **Educational Outreach**, **NSS** for a year
- Volunteered as a **Data Visualization Specialist** for the **Data Science for Anand Good (DSAG)** initiative