

ABHISHEK MALAVIYA

Machine Learning Scientist

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Profile

Machine Learning Scientist with a builder's mindset and strong ownership ethic, completed MSc in Computing (AI) at Dublin City University (Aug 2025). Delivered **end-to-end ML pipelines, scalable payment and risk analytics solutions, dashboards, and data workflows across finance, retail, and consumer domains**. Proficient in **Python, SQL, R, TensorFlow, PyTorch, AWS (S3, EC2), GCP, Power BI**, and the full ML lifecycle — data processing, feature engineering, model development, versioning, testing, deployment, monitoring, and explainability (SHAP). Recently designed and deployed a **novel multimodal stock prediction system** integrating sentiment-intent features, achieving **87%+ R^2** for short-term forecasts and enhancing market risk insights.

Education

Dublin City University, Ireland

September 2024 – August 2025

MSc in Computing (Majors in Artificial Intelligence)

Dublin, Ireland

- **Key Modules:** Data Management & Visualisation, Statistical Data Analysis, Data Analytics & Data Mining, Machine Learning, Professional & Research Practice.

University of Mumbai

January 2021 – May 2024

Bachelors in Computer Engineering (CGPA: 7.95)

Mumbai, India

- **Key Modules:** Data Warehousing & Mining, Database Management Systems, Quantitative Analysis, Machine Learning, Big Data Analysis, Social Media Analytics, Deep Learning, Statistics for AI/ML, Artificial Intelligence.

Technical Skills

Python, SQL, R | Pandas, NumPy, Scikit-learn, **TensorFlow**, PyTorch, Matplotlib, NLTK, spaCy | **AWS (S3, EC2), Azure Databricks, GCP, Cloud Computing** | Power BI, Tableau, Excel, Jupyter, Git, Version Control | **Time Series Forecasting, NLP, Explainable AI (SHAP)**, ETL Pipelines, End-to-End ML Pipelines, Data Processing, Model Development, Model Versioning, Model Testing, Model Monitoring, Business Intelligence.

Applied Machine Learning Projects

Academic Projects (Masters)

Multimodal DJIA Forecasting | *Python, AI/ML Models, NLP, SHAP, Sentiment and Intent Analysis, Time-Series Forecasting* | [Github](#)

July 2025

- * Improved **t+1 forecast R^2 to 0.8767** by engineering a **50+ feature multimodal dataset** combining technical indicators with sentiment & **9 behavioral intent** signals from financial news and Reddit.
- * Engineered behavioral signals to capture **psychological drivers behind stock movement** — rarely explored in financial time-series research.
- * Applied **SHAP explainability** on TCN models, identifying **Reddit-based urgency & fear as stronger short-term predictors than traditional OHLCV metrics**.
- * Outperformed baseline models: TCN achieved **$R^2 = 0.8767$ @ t+1**, with robust generalization across t+3 and t+7 horizons; findings showed **behavioral features impact more than price history in volatile market conditions**.

Customer Satisfaction Prediction | *Python, XGBoost, SMOTE, NLP, SHAP* | [Github](#)

April 2025

- * **Increased F1-score by 12%** using **SMOTE** for class imbalance and **XGBoost** for classification on **100K+ Brazilian e-commerce reviews**.
- * Applied **XGBoost, MLP, and Logistic Regression with SMOTE** for imbalance handling and ROC-AUC/F1 evaluation.
- * Enhanced accuracy by integrating **VADER-based sentiment** scores from review titles into feature set.
- * Visualized class distributions, ROC curves, and SHAP-based feature importance to improve interpretability.

Stock Market Volatility & Sector Dynamics | *Python, Power BI, Time-Series Analysis* | [Github](#)

Dec 2024

- * **Analyzed historical market data** to study volume and ticker dynamics across **12+ sectors (Technology, Financials, and other major industries)**.
- * **Created visualizations for volatility, sector-wise growth, and bar/pie charts** to compare average volume distributions.
- * **Implemented Power BI for interactive dashboards** to analyze sector trends and year-over-year ticker changes.

Personal Projects

FDA Drug Marketing Category Classifier | *Python, Power BI, XGBoost, SHAP* | [Github](#)

May 2025

- * Achieved **97%+ macro AUC** by classifying **110K+ FDA drug records** across **13 marketing categories**.
- * **Engineered features** from drug metadata (formulation, route, labeler, ingredients) and handled class imbalance via grouping.
- * Implemented XGBoost and Random Forest with SHAP & model interpretability, **achieving 97%+ macro AUC**.
- * Delivered Matplotlib and PowerBI for **data visualization of drug class volumes, grouped counts, and category drift**.

AI - Driven Options Trading Bot | *Python, YFinance* | [Github](#)

May 2024

- * Automated options trading execution using **ANN & LSTM models with MACD & Bollinger Bands** for signal generation.
- * Implemented **Adam Scheduler, ReLU, EarlyStopper, and Reduce LR on Plateau** to optimize model performance.
- * **Focused on buying and selling call/put options contracts based on predictive insights**, applicable to real-time payment transaction monitoring and fraud prevention strategies.

SAKEC Alumni Management System | *PHP, MySQL, Apache Server, HTML* | [Github](#)

September 2023

- * Designed and implemented a **database-driven web application** for alumni tracking.
- * Created a **user-friendly and responsive login system for Admin and Alumni**, including a Sign Up page for new Alumni.
- * **Implemented alumni data storage and management on an Apache server**, accessible via the Admin page.
- * **Enabled alumni to search and view information of other registered alumni** while allowing Admin to manage the database.

Other Work Experiences

Swords Security

May 2025 – Present

Steward

Dublin, Ireland

- * Monitored large-scale public events to detect and resolve potential risks in real-time, ensuring safety and smooth operations
- * Demonstrated **quick decision-making and situational awareness under high-pressure and unpredictable scenarios**.

Achievements and Interests

Achievements

Certifications

January 2025

HackerRank

Dublin, Ireland

- * **SQL Certification (Basic)** | [Certificate](#)
- * **Python Certification (Basic)** [Certificate](#)
- * **Problem Solving Certification (Basic)** | [Certificate](#)

Co-Head & Co-Founder, SAKEC Content Creators Club

May 2024

Student Committee Lead

Mumbai, India

- * Led a student-driven club to promote campus culture through digital content and event coverage.
- * Managed weekly operations, content strategy, and social media presence for major college events.
- * Demonstrated leadership, teamwork, and communication in organizing and scaling outreach.

Interests

Formula 1 strategy analysis, Financial markets & investing, AI research, Fitness & nutrition.