Adam Mohib

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Education

University of California, Santa Barbara — *Santa Barbara, CA*
B.S. in Statistics & Data Science, GPA: 3.7/4.0 — *Sep. 2024 – Jun. 2027*

Skills

- **Languages & Tools:** Python, R, SQL, NumPy, pandas, TensorFlow, Scikit-learn, Keras, Bash, LaTeX, Git, GitHub Copilot
- **Frameworks/APIs:** Schwab API, Alpaca API, Streamlit, Tweepy, yfinance, cvxpy, Docker, Azure, MCP
- **Math/Stats/Finance:** Linear Algebra, Optimization, Probability Theory, Stochastic Processes, Matrix Completion, Monte Carlo, Financial modeling, Time series analysis, Risk management, Econometric analysis

Experience

Mathematical Finance Researcher — *Oct. 2024 – Present*
University of California, Santa Barbara — *Santa Barbara, CA*

- Developed Monte Carlo simulation framework for maximum determinant matrix completions using Wishart distributions, creating 90% confidence intervals for covariance matrix entries with missing data.
- Extended Royal Society theoretical frameworks through computational analysis of Kronecker products, processing 1000+ simulations to validate maximum entropy approaches in Modern Portfolio Theory.
- Conducted novel research on statistically stable matrix completion methods for financial risk modeling, with findings set to be published in academic journal.

Software Engineering and Financial Data Science Intern — *May 2025 – Aug. 2025*
Swing Phi Financial Services — *Remote*

- Engineered real-time financial data pipelines through Python microservices, resulting in 13x increase in structured L2 data ingestion volume.
- Developed AI-driven trading signal research through machine learning and quantitative modeling frameworks, resulting in enhanced algorithmic asset pricing models.
- Implemented automated data validation and error handling systems, reducing manual intervention requirements and improving overall data pipeline reliability.

Selected Projects

Loom Chatbot App – AI Emotion Logging Chatbot (Proof of Concept) — *Aug. 2025*
Technologies: React Native, Python, OpenAI API

- Built a proof-of-concept AI chatbot agent in React Native that logs and visualizes user emotions over time using natural language processing.
- Enabled sentiment tracking and interactive charts, supporting analysis of 20 distinct emotion labels for real-time emotion analytics.

Researchify 2 – Agentic Research Assistant — *Aug. 2025*
Technologies: Streamlit, OpenAI API, Hugging Face, Kaggle API, Docker, Pandas

- Developed autonomous web app for natural language data analysis and secure dataset processing for non-technical users.
- Processed 50+ datasets with multi-layer security and automated ingestion, reducing manual analysis time by approximately 15%.

Time Series Analysis of Sector-Specific ETFs — *March 2025*
Technologies: R, quantmod, rugarch, Yahoo Finance API, GARCH modeling

- Analyzed volatility clustering in sector ETFs using GARCH models and automated financial data pipelines.
- Processed 2+ years of daily OHLC data, revealing strong volatility clustering and conditional heteroskedasticity.

Schwab L2 Order Book Platform — *July 2025*
Technologies: Python, Schwab API, Azure, CSV, Bash

- Built low-latency Level 2 order book logger for real-time market data capture and high-availability monitoring.
- Achieved sub-millisecond data processing and 99% uptime for 24/7 streaming of market data.