Adam Mohib

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linkedin.com/in/adamsmohib — github.com/adamsmohib — U.S. Citizen

Skills

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

Education

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

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

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

- Built autonomous data analysis web application through Streamlit and OpenAI API integration, enabling non-technical researchers to analyze datasets through natural language questions.
- Implemented 6-layer security framework against prompt injection, formula injection, and data vulnerabilities, ensuring safe processing of uploaded datasets.
- Integrated Kaggle and Hugging Face APIs for automatic dataset download through Docker containerization, supporting seamless multi-platform data ingestion.

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

- Conducted econometric analysis of five Vanguard sector ETFs using daily return data, implementing GARCH(1,1) models to analyze volatility clustering and conditional heteroskedasticity.
- Applied Augmented Dickey-Fuller stationarity tests and Engle's ARCH tests, revealing strong evidence of volatility clustering across all financial sectors.
- Developed automated data pipeline using Yahoo Finance API, processing 2+ years of daily OHLC data with comprehensive autocorrelation analysis.

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

- Built production-grade Level 2 order book logger through low-latency Python streaming architecture, achieving sub-millisecond data processing for 24/7 market data capture with automatic failover.
- Deployed high-availability system through Azure VM infrastructure with comprehensive monitoring, resulting in 99% observed uptime and real-time health tracking with microsecond-precision timestamps.