Yash Vardhan

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Education

Georgia Institute of Technology — Atlanta, GA

BS in Computer Engineering & Business Administration (Finance concentration) — *May 2025 (Expected)*

- **GPA:** 4.0/4.0 | **Awards:** ACT Perfect Scorer, #1 Ranked Student in College of Engineering (Scholar Award), Top 3 Cornell Trading Competition
- **Clubs:** Trading Club: Quantitative Finance Sector, Data Science @ GT, Startup Exchange, Create-X, GT Qurbani
- **Coursework:** Algorithms, Linear Algebra, Discrete Math, Multivariable Calculus, Quantitative Analysis for Business, Investments, Fin. Markets and Trading, Programming for Hardware Systems (Assembly)

Experience/Leadership

Chicago Trading Company — Jun. 2024 — Aug. 2024

Engineering Intern | Reference Data Team — *Chicago, IL*

- Ranked **1 out of 54** interns in open outcry mock trading. **Top 5** in options basics, trade simulation creation, and overall mock trading.
- Developed Python scripts using **SQLAlchemy and Pandas** to automate database migration tasks, increasing overall efficiency by **30%**.
- Created a webapp using **Flask, Snowflake, and ReactJS** to visualize historical ticker data and display reference data for particular instruments.
- Developed **SQL stored procedures** to backfill the new database from an older versioned temporal database, reducing missing rows by **90%**.
- Collaborated with **Senior Quant Traders** to develop an internal symbol migration plan between versions of the database using **Python**; intelligently assigning migration priorities based on **symbol deprecation and historical trade volume.**
- Created a fully functional trading simulation using **Python, NumPy, and Matplotlib** to simulate trading strategies and test against randomized and historical data.

Valkyrie Trading — May 2024 – May 2024

Quant Trader Microintern — *Chicago, IL*

- Developed a multithreaded **Python** trading algorithm utilizing **monte-carlo processes** to predict theoretical value in a simulation game.
- Earned profit by algorithmically finding **arbitrage** in markets quoted by players while managing exposure through fitting strategies.
- Utilized **NumPy, Pandas, and Matplotlib** to analyze and visualize data, on returns, trades, and expected pnl.
- Shadowed traders and quants to understand the **options market**, their models, and their various risk management strategies.
- Performed in the **top 5%** of all participants in the algorithmic trading competition and market making games.

Capital One — Jun. 2023 — Aug. 2023

Software Engineering Intern — *Richmond, VA*

- Added to **MLaaSFlow** by building 3+ components using **Python, Pandas, and NumPy** to preprocess, classify, and segment data.
- Developed components as part of a multi-phase **unsupervised ML** application to reduce analysis time by **50%** for over **40 TB of fraud data**.
- Benchmarked **FAMD, HDBSCAN, K-Prototypes, and Laplacian scoring** clustering approaches to identify segments.
- Trained and tested an **ML** model to identify column data types using **TensorFlow and Keras** with over **90% accuracy**.
- Prototyped **5+ time-series analysis** models for Aenomoleas, an application used to detect anomalies in data.

Global Asset Management Group — May. 2022 — Aug. 2022

Quantitative Trading Analyst — *Orlando, FL*

- Assisted in conducting and **identifying high-value trades** through the thinkpipes trading platform (provided by partners Charles Schwab and TD Ameritrade) valued at **over $100 million** in total customer assets.
- Discovered potential trades using quantitative strategies based on **volume, option pricing, and price-actions.**
- Utilized AutoIt and Python to create **volume based trading strategy**, leveraging the Real-Time Data feed provided by thinkpipes, that calculated price movement based on **volume changes per fixed time intervals** to identify stock momentum and trade accordingly.
- Designed a Python **web-scraping tool** collecting contact and provider information to onboard clients with unmanaged 401ks.

Projects/Research

AI & ML Financial Research — Dec. 2022 — Present

- Designed an **ML portfolio optimization algorithm** in Python using NLP, reinforcement learning, and forecasting.
- Developed a base reward function and **Q-Learning algorithm** that incorporated changes in Sharpe Ratio and stock trends to guide trading decisions and maximize portfolio performance using **Keras and TensorFlow**.
- Collaborated with **NLP and forecasting subteams** to integrate **time-series and sentiment analysis** (based on news reports and tweets) into the algorithm, enhancing the model's ability to capitalize on market trends by **25%**.
- Utilized advanced volatility models, including **GARCH and theories from past papers**, to perform **volatility forecasting** and facilitate more precise predictions of future trends while enabling better risk management strategies for the trading algorithm.

Trading Algorithm Development | *Python* — May 2022

- Developed multiple trading algorithms using **NumPy, pandas, and matplotlib** and QuantConnect to predict and forecast ETFs and stocks.
- Created QuantConnect algorithm to **hedge against negative price movements** by purchasing put options (- Delta, + Vega) at high volatility.
- Made another Python model using **moving average crossovers** as trading indicators under **7-day and 1-month time intervals.**
- Back-tested each model against **6-month periods of the S&P 500** with different levels of volatility and compared each model's decisions to a random coin flip distribution.

Skills

Programming Languages: Python, SQL, Java, C/C++, JavaScript, Dart, MIPS, VHDL, HTML, CSS, AutoIt, R, Assembly, & LaTeX
Tools: *Data Analysis:* TensorFlow, Keras, OpenCV, NumPy, Pandas, PyTorch, & Sk-learn | *Dev Tools:* Git, Firebase, AWS, Jira, Docker, Jenkins, VIM
Languages: *Native:* English, Hindi | *Fluent:* Gujarati, Marwari | *Intermediate:* Spanish
Proficiency with: Xcode, GitHub, Android Studio | MOS Office | Adobe Illustrator, Photoshop, Premiere, & After Effects