Kurtik Appadoo

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Education

Union College, NY Schenectady, NY

Bachelor of Science in Computer Science & Economics Double Major — GPA: 3.6 *Aug. 2021 – June 2025*

Relevant Coursework: Data Structures and Algorithms, Data Visualization, Natural Language Processing, Data Mining & Machine Learning, Financial Analysis, Economic Forecasting, International Economics, Data Science
Honors: Computer Science, Economics, Dean's List , Omicron Delta Epsilon Alpha Beta, Order of Omega Eta Tau
Leadership: SparkLab, College Varsity Tennis, $\chi\psi$ Fraternity, $\alpha\Phi\Omega$ Service Fraternity, Order of Ω - Vice-President

Experience

Research Software Developer - Maximum Matching Sep. 2024 – Dec. 2024

Union College, NY *Schenectady, NY*

- Led the creation of 1000+ tests to validate d-partite graph matching algorithms, improving reliability and identifying edge case errors.
- Applied advanced algorithm design techniques to improve performance and reliability of maximum matching in d-partite graphs, achieving 99% improvement in theoretical performance.
- Leveraged discrete mathematics and graph theory concepts to validate large-scale matching algorithms, improving edge case detection and correctness. Used communication skills to engage and collaborate among a team.

Data Engineer Intern - BI & Analytics July 2024 – Dec. 2024

Foppiani Shipping & Logistics US Inc *Jamaica, NY*

- Built an interactive React + Google Maps app to visualize 1.5M+ consignees, optimizing API usage to reduce client data retrieval time. Implemented scale-able and re-usable front-end code.
- Implemented ETL pipelines in Python and R using Pandas and Numpy to clean and integrate large shipping datasets, ensuring smooth and reliable ingestion during back-end processing for Business intelligence reporting.
- Designed and deployed a full-stack, end-to-end microservices-based solution with Firebase & Firestore, streamlining data workflows and database integration; incorporated CI/CD pipelines to accelerate feature delivery and reduce deployment errors; solution reduced data silos and improved cross-functional team collaboration by 40%.

Research Software Engineer – Crypto Arbitrage Systems Sep 2024 – Mar 2025

Union College – Economics Department *Schenectady, NY*

- Built a full-stack real-time crypto analytics platform using Flask, WebSocket and CoinAPI, streaming BTC/USD data from several exchanges with <200ms latency to detect and visualize arbitrage opportunities.
- Designed and deployed an end-to-end ETL pipeline to serve real-time price data via REST API and WebSocket, integrated into a React Native + Expo frontend.
- Processed and analyzed 800K+ trade records, generating profitability heatmaps, exchange-pair network graphs, and discovering 7 recurring arbitrage strategies.

Machine Learning Researcher – Predictive Arbitrage Modeling Mar 2025 – Jun 2025

Union College – Computer Science Department *Schenectady, NY*

- Developed a predictive ML pipeline using scikit-learn and statistical methods to train predictive models (Random Forest, SVM, Gradient Boosting) to forecast optimal arbitrage strategies with 86.04% accuracy and simulate $897K+ trading profit across 30K+ trades.
- Engineered a time-series dataset of 28M+ BTC/USD ticks using Pandas and NumPy for feature extraction and data cleaning across 4 exchanges via WebSocket ingestion, applying feature engineering on volatility, price spreads, and cross-market convergence metrics.
- Implemented a Python-based backtesting engine to evaluate latency-aware arbitrage trades with exchange fee modeling, achieving 99.87% trade success rate and $29.76 average profit per trade .

Technical Skills

Languages: Python, R, Java, C//C++, C#, SQL, Javascript, Typescript, Assembly, HTML/CSS, GraphQL
Frameworks: Node.js, JUnit, React, React Native, Next.js, Django, Express.js, Spring Boot, Flask, TailwindCSS
Libraries & Tools: scikit-learn, TensorFlow, Pandas, NumPy, Seaborn, Matplotlib, Pytorch, tidyverse, dplyr, ggplot2
Developer Tools: Git, Github/Gitlab, Docker, AWS, GCP, VSCode, PyCharm, IntelliJ, Supabase, Firebase, Cursor, PostgreSQL, Postman, Rstudio, LateX, Gradle, Maven, Tableau, Logisim, Qtspim, Excel, agile, scrum, DevOps