Aaron Gao

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Education

University of Waterloo Sep. 2023 - Apr. 2028 (Expected)

Bachelor of Computer Science

- **Faculty Average:** 3.94 (90.3%)
- **Courses:** Data Structures and Algorithms, Object-Oriented Programming, Compilers, Functional Programming

Experience

Toronto-Dominion Bank May. 2024 - Sep. 2024

Quantitative Developer Intern | Python, React, SQL *Toronto, ON*

- Worked in an asset management team providing proprietary analytics and research for 15 fixed income investment funds with **$25 billion** in AUM.
- Developed a risk monitoring system using **Python** that vets incoming trades against a set of quantitative guidelines, ensuring the portfolio remains duration neutral, retains liquidity, and follows industry regulations.
- Reduced **SQL** execution time by **85%** by optimizing the query plan when calculating the weighted average maturity of government and corporate bonds.
- Built a **Python** data pipeline for portfolio managers to download and distribute financial reports generated daily in-house using **QuantLib** and oversaw its deployment on **AWS**.

Watonomous Sep. 2023 – May. 2024

Software Developer | C++, ROS2, Python *Waterloo, ON*

- Implemented a navigation system for autonomous vehicles by leveraging sensor data obtained through the **ROS2 Framework**, increasing the maximum aggregate distance by **50%** within urban areas.
- Designed an optimal path finding blueprint using **Dijkstra's Algorithm** where the weights between nodes are determined by the perceived hazard level of the obstacles.
- Developed motion control algorithms using **C++** to efficiently guide vehicles through potential obstacles, reducing the minimum stopping distance by **25%** while ensuring passenger safety and comfort.
- Reproduced test environment across platforms using **Docker**, ensuring reliable deployment on **Microsoft Azure**.

Projects

Stock Master | *Python, Django, MySQL, React, Redux*

- Developed a **full-stack** application with the **Django Framework** that generates a customized portfolio of stocks and utilizes polynomial regression to determine optimal entry and exit of positions.
- Backtested trading system using **Blueshift** and utilized a decision tree to create an optimal strategy, surpassing the benchmark indices of the respective sectors by **3%-5%**.
- Automated a **Python** script using **JavaScript** to retrieve financial data from over **6,000** securities each night, storing the information into a **MySQL** database for performance and analysis.
- Analyzed risk of **covariance matrix** using **pandas** and **numpy**, determining the optimal allocation of portfolio.

Python AlgoTrader | *Python, Jupyter Notebook*

- Created a **Python script** that analyzes historical stock data and uses the intersection of moving averages to determine the optimal entry and exit of a position, surpassing S&P 500 index by **6.5%**.
- Decreased the number of calls to the **Yahoo Finance API** by **66%** by caching reused data in **hash tables**.
- Provided statistical analysis using math equation written in **Jupyter Notebook** and graphs from **Matplotlib**.

Technical Skills

Languages: Python, C/C++, Java, SQL, JavaScript, TypeScript, Scala, HTML, CSS, R, Bash, Racket
Frameworks and Libraries: Django, Spring Boot, MongoDB, Express.js, React, Redux, PostgreSQL, Pandas
Developer Tools: Git, Linux, Docker, AWS, Postman, ROS2, Yarn, Tomcat, Anaconda, DigitalOcean