
EXPERIENCE

- **Citadel Securities** New York, NY
Software Engineer Sep. 2022 - Present
 - Led migration of the CME Options market data adapter, overhauling platform infrastructure in C++17, integrating with internal deployment tools. Built and deployed a new service to support intraday bootstrapping of user-defined spreads without querying the exchange. Enabled the Options team to reduce recovery times from 2 hours to 2 minutes.
 - Spearheaded migration of the NYSE Equities market data adapter, transforming TCP and multicast market data feeds into structured C++ callbacks for Quantitative Researchers. Applied advanced template metaprogramming, constexpr logic, and internal performance profiling tools to improve system efficiency, reducing packet processing latency by 10%.
 - Led the development of the UI for a pivotal PNL Aggregation / Fusing Platform using React, Typescript, and q/kdb, collaborating closely with backend engineers and traders to ensure seamless functionality. This pivotal component played a crucial role in the company's strategic initiative to centralize trading functions, effectively controlling fusing at the company.
 - Orchestrated a comprehensive overhaul of the Capital Monitoring Tool, replacing a Node.js backend with an in-house kdb database streaming solution, significantly boosting performance and reducing deployment time. Streamlined workflows by implementing Python endpoints for risk calculation and scenario analysis. Completely transformed the user experience by modularizing the UI and implementing a dynamic React-based panel system.
 - Managed the backend of the company's developer-focused Gen AI tool, utilizing Python and FastAPI. Facilitated the on-boarding of 500 developers who utilize the tool for inquiries, showcasing its value in streamlining developer workflows.
- **MIT Quest for Intelligence** Cambridge, MA
Student Researcher Jun. 2021 - Sep. 2022
 - Conducted a project to assess the robustness of image face recognition neural networks compared to human performance. Developed a clustering algorithm that utilized the feature vectors generated by the networks to determine face recognition accuracy.
 - Designed and implemented experiments involving hue shifts and varying levels of blur as degradation techniques to evaluate the performance of the neural networks. Expanded knowledge of deep learning models, particularly ResNet, through practical application and experimentation during the project.
- **WP Engine** Austin, TX
Software Engineering Intern Jun. 2020 - Aug. 2020
 - Made significant contributions to the development and implementation of a suite of tools using Go, Docker, Kubernetes, GCP, Terraform, and Jenkins. Collaborated with the team to build and refine a Node application builder, API server, and CLI tool.

PROJECTS

- **Security of CAT-SOOP:** Conducted a comprehensive security analysis of CAT-SOOP, the grading website for one of MIT's largest classes. Leveraged Python and BurpSuite to identify and exploit security vulnerabilities, resulting in the discovery of sensitive student data, gaining instructor permissions, and uncovering methods to effectively shut down the website server.

EDUCATION

- **Massachusetts Institute of Technology** Cambridge, MA
M.Eng. in Computer Science; GPA: 5.0; B.S. in Computer Science; GPA: 4.9 Aug. 2018 - Sep. 2022

PROGRAMMING SKILLS

- **Languages:** C++, TypeScript, Python