Ashika Verma

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Experience

- **Citadel Securities** — New York, NY
  Software Engineer — *Sep. 2022 - Present*
  - Spearheaded the "25x5" initiative, launching the firm's first 24-hour trading capability for US equities. Designed and implemented the core market data infrastructure and applications, which provided previously inaccessible client flow and established a significant new revenue stream.
  - Executed a strategic overhaul of the market data infrastructure, leveraging C++20 to implement a new code generation framework and enhance build tooling. These improvements decreased new feed integration time and reduced critical bugs, boosting developer productivity and system robustness.
  - Led the migration of the CME Options market data adapter and overhaul of the platform infrastructure, improving system recovery times from two hours to just two minutes. Developed and deployed a new service to support intraday bootstrapping of user-defined spreads without querying the exchange.
  - Overhauled packet processing for the NYSE Equities market data adapter, transforming market data feeds into structured C++ callbacks for Quantitative Researchers. Applied advanced template metaprogramming and internal performance profiling tools to improve system efficiency, reducing packet processing latency by 10% across all software applications at the firm.
  - Championed the migration of the NYSE Equities market data adapter, transforming market data feeds into structured C++ callbacks for Quantitative Researchers. Applied advanced template metaprogramming and internal performance profiling tools to improve system efficiency, reducing packet processing latency by 10%.
  - Led front-end development for a firm-wide PNL Aggregation & Fusing Platform using React, TypeScript, and q/kdb. Collaborated with backend engineers to shape a cohesive API, creating a centralized, highly configurable UI that reduced manual errors and eliminated trader context-switching.
  - 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.
- **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.

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