Joseph Zhang

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Education

University of Pennsylvania Philadelphia, PA

B.S.E. Networked and Social Systems Engineering *May 2025*

- GPA: 3.98/4.0
- Teaching Assistant – CIT 5950 (Computer Systems Programming for MCIT degree)
- Relevant Coursework: Distributed Systems, Operating Systems, Algorithmic Game Theory, Discrete Math

Technical Skills

Languages: C++, C, Python, Java, JavaScript
Tools/Technologies: Linux, gRPC, Protobuf, AWS, GDB, React JS, Volatility (Memory Forensics)

Experience

Citadel GQS – Execution Algo Engineering Jun. 2023 – Aug. 2023

Quantitative Research Engineer Intern *Chicago, IL*

- Implemented **market gateway controls** for China by checking cancellation rate and existing opposite direction orders on QFII and SC exchanges and blocking non-compliant incoming orders using **C++** and **gtest**
- **Automated fill model refitting pipelines** using Airflow and improved US darkfar model child order fill rates by **8.6 bps**, working with research team to transform manual processes to pipelines that are easy to run and monitor
- Wrote **Python** framework to generate DAG workflows with support for **recursive variable definitions**, **file template variable substitution**, and **parallel model evaluation** with integrated Jira ticket signoffs
- Developed three-way comparison that generates diff between prod, old model, and new model execution sims on key TCA metrics, helping **extend midfill and darkfar models to the EU** and facilitating algo research

Amazon May – Aug. 2022

Software Development Engineer Intern *Sunnyvale, CA*

- Created an escalation service API using **Java and various AWS resources** to append question-answer pairs to escalated cases and publish them to an **SNS topic** for ingestion into data lake for further analysis
- Rewrote **E2E tests** by integrating a faster log event filter API, resulting in a **91% reduction** in test run time
- Developed a tool to convert **JSON** question hierarchies to cards and workflows defined in **XML**, so workflows can be automatically published – the former process required manually writing **thousands** of lines per workflow
- Led and facilitated team communication as **scrum master** during daily stand-ups for a two-week sprint

Georgia Tech May 2020 – May 2022

Research Assistant at the CyFI Lab *Atlanta, GA*

- Authored paper with team of graduate students about detecting backdoor attacks on deep learning models using **memory forensics** to ensure the benignity of **online-learning Linux systems**
- Developed **Volatility** plugins using **Python** and **GDB** to introspect memory images, the **CPython** interpreter, and the **Tensorflow** VM and recover key data structures, allowing us to perform backdoor detection on the model

Department of Defense Jun. – Jul. 2020

Computer Security Intern *Norfolk, VA*

- **Selected to represent the lab** and present evil twin attack detection research to a national representative

Projects

Gmail and Google Drive Clone | *C++, gRPC, Protobuf, CMake, React* Mar. – May 2023

- Developed a Gmail and Google Drive clone featuring a **distributed key-value storage service** which replicates user data across tablet groups and maintains consistency using remote write primary-based protocol
- Implemented load balancing and **fault tolerance** through checkpointing and logging

Facebook Clone | *React JS, Express, Socket.io, DynamoDB, S3, EC2, Apache Spark* Nov. – Dec. 2022

- Won **Best Project Award** out of a class of 160 students

Awards & Recognition

USA Computing Olympiad Platinum Division Contestant: Top 200 in age group nationally
American Invitational Mathematics Exam Distinguished Qualifier: Top 2.5% out of 55,000 participants