Joseph Zhang

jzhang25@upenn.edu | github.com/joezbub | linkedin.com/in/joseph-zhang25/

Education

University of Pennsylvania Philadelphia, PA
B.S.E. Networked and Social Systems Engineering *May 2024*

- GPA: 4.0/4.0
- 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 Jun. 2023 – Present
Quantitative Research Engineer Intern *Chicago, IL*

- Execution Algorithm Engineering

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
- Implemented and deployed a self-service web app for HR agents using **React JS** to provide a GUI for users to easily create question workflows, change orders and hierarchies, and preview existing workflows
- 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
- Publishing to the Usenix Security Symposium 2023

Department of Defense Jun. – Jul. 2020
Computer Security Intern *Norfolk, VA*

- Designed an automated client-side detection system for evil twin attacks with **Python** for scripting and tools like **Wireshark** and **Aircrack-ng** for monitoring network and conducting deauthentication attacks
- **Selected to represent the lab** and present research to a national Department of Defense representative

Projects

Google Workspace | *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

Unix-like Operating System | *C, Linux* Oct. – Dec. 2022

- Implemented a **process scheduler** supporting signaling and priorities, a **FAT filesystem**, and a shell

Facebook | *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

USACO Platinum Division Contestant: Top 200 in age group nationally
AIME Distinguished Qualifier: Top 2.5% out of 55,000 participants