Joseph Zhang

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Education

University of Pennsylvania Philadelphia, PA

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

- GPA: 4.0/4.0
- Teaching Assistant - CIS 548 (Graduate-Level Operating Systems)
- Relevant Coursework: Operating Systems, Cloud Computing, Algorithms, Discrete Math, Linear Algebra

Technical Skills

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

Experience

Citadel Aug. 2022 – Present

Incoming Quantitative Research Engineer Intern *Chicago, IL*

- Will be on Execution at GQS Summer 2023

Amazon May 2022 – 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. 2020 – 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

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

- Created a user-level operating system featuring a **shell** supporting pipes, redirections, and job control, a **randomized scheduler** supporting multiple priority levels and signaling, and a **FAT filesystem**

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

- Generated personalized news feed by running a **Spark adsorption algorithm** every hour on Apache Livy
- Implemented posts, comments, and chats with typing indicators and emoji reactions with **web sockets**
- 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 Examination Distinguished Qualifier: Top 2.5% out of 55,000 participants
Eagle Scout