

# 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 - CIT 5950 (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*

- Execution in 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**