

# Andrew(Zhaorui) Zhang

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## Education

### University of Washington

Master of Science in Electrical and Computer Engineering

Seattle, WA

Sept. 2022 - Jun. 2024

- Relevant Coursework: Algorithms and Computational Complexity, Data Structures and Algorithms, Database Systems, Computer Communication Networks, Systems Programming, Web Programming

### Shanghai Jiao Tong University

Bachelor of Engineering in Electrical Engineering

Shanghai, China

Sept. 2017 - Jun. 2021

## Skills

Programming	Java, Python, C, C++, SQL, JavaScript, HTML, CSS, Bash
Development Tools	Git, Node.js, Express, React, JDBC, Maven, FastAPI, Docker, Linux, Nginx, LaTeX, OpenCV
Database & Cloud	SQLite, MySQL, PostgreSQL, Microsoft Azure, AsterixDB

## Experience

### BECU(Boeing Employees' Credit Union)

Software Engineer, Capstone

Seattle, WA

Feb. 2023 - May 2023

- Developed a sandbox application using Python FastAPI framework for securely testing malicious software and website
- Implemented several REST API endpoints to facilitate test requests submit, file upload and analysis reports retrieval
- Integrated Cuckoo sandbox and VirtualBox to allocate virtual machines for testing submitted software, utilized tcpdump to capture network traffic, and stored analysis data in PostgreSQL database
- Achieved reverse proxy using Nginx, containerized the project with Docker, and deployed the application on Azure

## Projects

### Peer-to-peer (P2P) File Sharing System

Java, JDBC, MySQL, Maven

Seattle, WA

Jan. 2023 - Mar. 2023

- Led a team to develop a multi-threaded P2P file sharing system using Java under the Maven framework, which facilitates peer discovery over the network, searches for nodes holding the target files, and enables file retrieval among nodes
- Designed a custom transport protocol on top of UDP and applied ARQ techniques for reliable file transfer, and supported content chunking, retrieving parts from different nodes, and file parts merging
- Implemented a link-state routing protocol which can discover the entire network from neighboring peer nodes, construct a distance-sorted routing table to enhance transmission efficiency, and dynamically update the routing table by active states
- Designed a gossip protocol to perform distributed content searches across the entire network, and utilized time-to-live (TTL) to manage the search lifecycle
- Connected to MySQL database using JDBC for storing and querying the routing table and the file-to-node mapping table

### Rapid Response Search Engine

C, C++

Seattle, WA

Mar. 2023 - Jun. 2023

- Developed modules that can efficiently crawl folders' sub-tree, generate inverted indices, and store indices along with error checking metadata in cross-platform POSIX format
- Designed a query processor that can handle user queries, search through multiple indices, and provide a ranked list of results' link based on their correlation with the query words within 1 second
- Created a multi-threaded web server with a thread pool to handle client connections, and enhanced robustness by escaping cross-site scripting flaw and directory traversal attack

### E-commerce site for digital cameras and accessories

JavaScript, Node.js, Express, SQL, HTML, CSS

Seattle, WA

Mar. 2023 - Jun. 2023

- Developed a full-featured e-commerce website with product search, bulk purchasing, and user management functionalities, deployed the project on Heroku for public access, and utilized CI/CD pipelines for continuous delivery
- Developed front-end using HTML, CSS, and JavaScript, and employed Cookies and local storage to offer personalized services
- Utilized Fetch API to fetch and update backend data and to manipulate the DOM tree for dynamic page updates
- Built backend APIs using Node.js and Express, utilized SQLite to connect to the database for updating product and user information, and enhanced security by implementing salted hashing of passwords and user permission controls