Zhaoyang "Alyssa" Lu

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EDUCATION

Northeastern University, Silicon Valley, CA
Master of Computer Science in progress   June 2026
University of California, Irvine, Irvine, CA
Bachelor of Science in Informatics   March 2024

TECHNICAL SKILLS

Frontend Development: React Native, Flutter, TypeScript/JavaScript, HTML/CSS
Backend Development: Python, C++, Node.js, Data Structures & Algorithms, Distributed Systems
Database & Cloud: MongoDB, Firebase, Redis, AWS ECS, Linear Programming, Resource Optimization
Development Tools: Git, REST APIs, Stripe API, Google Maps API

PROJECT

Distributed Web Search System   Oct 2024 – Present

- Scaling up UCI web crawler into a **distributed** system using **C++** and **ZeroMQ**, aiming to process 10K+ pages across a 5-node cluster.
- Implementing leader-follower architecture with **Raft** consensus for fault tolerance, aiming to maintain 99.9% uptime during node failures.
- Applying resource allocation using **linear programming** to optimize crawler distribution and caching, aiming to improve resource utilization by 25%.
- Establishing a distributed inverted index using **Redis**, aiming to reduce query latency by 35% while handling 1K+ queries/second.

EXPERIENCE

SupTech Inc, Full-stack Software Engineer Intern, Irvine, CA   June 2024 – October 2024

- Built the company's payment processing backend as **RESTful API** on **GCP** using **NodeJS** with data stored in **Firebase Storage, Google**.
- Developed a secure transaction management system using **Stripe's API**, implementing **256-bit RSA encryption** for sensitive data.
- Added automated features like instant refunds for failed deliveries and recurring subscription handling, reducing manual intervention in payment disputes by 40%.
- Created an interactive map interface in **React Native, Meta,** that displays real-time order locations with custom filtering. Integrated a horizontally scrolling order carousel that synchronizes with map markers.
- Built a **push notification service** that alerts drivers about nearby orders in both **foreground** and **background** app states. Combined with the map system, this helped increase our driver response time from 45 to 32 seconds on average.

Makapo, Software Engineer Volunteer, Newport Beach, CA   July 2023 – June 2024

- Developed a **Flutter, Google,** mobile app for vision-impaired athletes on Newport Beach's competitive paddling team Makapo.
- Connected the app with the **Bluetooth** device on the canoe, allowing the coach to control the direction of the athlete's canoe.