HSUEH YUAN, KU

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Atlanta, GA, USA

EDUCATION

Georgia State University *2023 - Present*
MS, Computer Science, GPA: 3.8
National Taiwan University of Science and Technology *2016 - 2020*
BS, Computer Science and Information Engineering
Thesis Dissertations: Hsuehyuan Ku, Yuxiang Lin, and Shinming Cheng, "Spreading False Public Warning Messages through a Forged LTE Base Station", *CISC 2020*

SKILLS

C/C++, Golang, Python, Rust, JavaScript, Vue.js, WebSocket, RabbitMQ, PostgreSQL, Redis, MongoDB, ELK, Docker/K8S, Nginx, GCP

WORK EXPERIENCE

TeamT5 Taipei, Taiwan
Backend Engineer *Jun 2022 - Jul 2023*

- Revamped the core service architecture by replacing the Twisted framework with the high-performance Sanic framework, achieving a **30%** increase in QPS. This upgrade enhanced the overall system throughput and ensured faster response times for high-traffic scenarios.
- Developed pytest-based extensions for both unit and integration testing, automating key parts of the testing process and enhancing service reliability. These tests boosted test coverage by **80%**.
- Developed an automated system that generates Swagger docs and test environments for each pull request, boosting development efficiency and ensuring up-to-date API documentation.

Ucfunnel Taipei, Taiwan
Backend Engineer *Apr 2021 - May 2022*

- Developed various modules for an e-commerce platform using Golang, including user management, shop management, event management and so on.
- Optimized SSP advertising search performance by **47%** through the strategic integration of Redis for caching and lazy loading techniques, reducing query response time from **300ms** to **160ms** and significantly enhancing real-time bidding accuracy and user engagement.
- Engineered a robust product upload system leveraging message queues to handle large batch processing asynchronously, replacing the previous synchronous user batch upload mechanism. This solution enhanced system reliability, reduced server load, and improved user satisfaction by eliminating page blocking and minimizing upload errors.
- Developed and optimized a highly scalable live streaming service using WebSockets, achieving real-time synchronization between Facebook Live and chat. This solution enabled seamless multi-platform streaming and enhanced user engagement on our platform by **25%**.
- Led the design and implementation of a highly reliable Webhook service, reducing data transmission latency by **25%** and streamlining integration for seamless client-server communication.
- Established fully automated CI/CD pipelines using GitHub Action, reducing deployment time by **40%** and minimizing human error. Implemented database failover clustering with MySQL, ensuring **99.9%** system uptime and improving fault tolerance.

NICT Tokyo, Japan
Internship *Jan 2020 - Feb 2020*

- Developed an advanced visualization and scoreboard system for Capture The Flag (CTF) events, featuring real-time score updates, interactive charts, and detailed performance metrics.

PROJECTS

- **Hephaestus** Developed a personal utility suite including Instagram post uploader and Spotify music downloader. Developed primarily using Electron.js and Vue.js, some features implemented in Python.
- **Dionysus** Collaborated with a friend to develop a cocktail recipe query system. Responsibilities included leading architectural design, mentoring in backend development, ensuring best practices adherence, and contributing to frontend development with Vue.js for enhanced user experience. The project focused on developing my friend's backend skills while delivering a functional and well-maintained system for cocktail recipe queries.
- **Talkaway (Startup Project)**: Led the system design and development of an AI tutor, collaborating with a project manager and two engineers. Responsible for designing the overall system architecture, conducting feasibility research, and leading backend development using FastAPI. Also contributed to partial mobile development using Flutter.
- **Spoofing Alert (Thesis/Research Project)**: Established a research setup involving a simulated base station and utilized open-source SDN (srsLTE) in C++ to implement SIB 10, 11, and 12 for sending false presidential alerts for research purposes.
- **Policy Petition Website**: Developed a website using HTML and vanilla JavaScript dedicated to petitioning against a specific policy. The site includes campaign materials and informative speeches, accessed by over 1000 users.
- **Redi (URL Shortening Service)**: Developed a URL shortening service using Vue.js for the frontend and Golang for the backend, integrated with Redis and PostgreSQL. The service has an active user base of over 100 users.
- **Lingram**: Created a Telegram bot capable of converting Line stickers into Telegram stickers.
- **Phorm**: Developed a Python package designed for automating the filling out of Google Forms.