Tianyin (Andrew) Wang

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Education

Carnegie Mellon University Aug. 2023 - May 2025 (Expected)
Master of Science in Information Networking - Computer System Track *Pittsburgh, PA*

South China University of Technology Sept. 2019 - July 2023
Bachelor of Engineering in Computer Science and Technology | GPA: 3.96/4.0 *Guangzhou, China*

Professional Experience

Software Engineer Intern Feb. 2023 - June 2023
China United Network Communications Co., Ltd. *Guangzhou, China*

- Conducted full-stack engineering to develop web services of the Business Operating System.
- Collaborated to establish frontend user interface based on **ReactJS**, implement **RESTful APIs** and Microservices using **Spring Boot** on backend, and construct database cluster with **MySQL**.
- Orchestrated the deployment of load-balanced, and distributed web services using **Docker** containers and **Kubernetes**, and distributed service framework HSF; service being used by over 200+ developers.
- Increased RESTful services' QPS by **25%** by using **Kafka** as message broker and **Redis** for caching.
- Achieved fast search response with asynchronous execution using **Elasticsearch**.
- Improved caching efficiency by code splitting via **Webpack**, resulting in 60% faster page load times.

Research Assistant Apr. 2022 - Aug. 2022
University of Washington | Supervisor: Prof. Sheng Wang *Remote*

- Research topic: text augmentation by computer vision. [Slides]
- Proposed, experimented, and developed a novel text augmentation system in Python and Pytorch: map text to visual representation, augment it, and then map back to sentence-level text. [GitHub]

Projects

Smiling Faces Analysis Web App [Deployment] Typescript, Express.js

- Built a website to analyze facial emotion in Wikipedia by ML model; deployed it on **Amazon EC2**.
- Utilized Long Running Operation with Polling Pattern to avoid client timeouts when waiting for results
- Accelerated responses by **78%** through concurrent requests to Wikipedia and the Google Cloud API.

E-commerce Website [GitHub | Deployment] Java, JavaScript

- Built and deployed an e-commerce website for customers to shop and sellers to manage products/orders.
- Constructed frontend with React, backend with SpringBoot and database with **Hibernate** and MySQL.
- Increased system's throughput by 20% using multiple threads to consume messages in Kafka queue.

Multimedia Player [GitHub] C++

- Led a three-member team to develop a video/music player; developed functionalities such as video reverse playing and video preview by **FFmpeg**, audio visualization by **OpenGL** and user interface by **QT**.
- Established a video frame encoder-decoder system to support rendering video frames and sound.
- Developed a safe and consistent multithreading framework to manage concurrent tasks.

Dynamic Memory Allocator (malloc) C

- Created a novel better fit algorithm and incorporated block footer and mini-block optimization, achieving a 74.3% space utilization and increasing throughput by 41%, ranking **3%** on the scoreboard.

Skills

- **Languages**: Java, C/C++, Python, SQL, JavaScript, HTML/CSS
- **Tools/Frameworks**: Spring Boot, Docker, Kubernetes, MySQL, Redis, React.js, Node.js, Webpack, Kafka, RabbitMQ, Hibernate, Elasticsearch, PyTorch, Flask
- **Development**: Git, AWS, OOP, CI/CD, RESTful API, Unit Testing, CMake, Unix/Linux