

Ethen Liu

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EDUCATION

Carnegie Mellon University

Master of Science in Mobile and IoT Engineering

August 2024 – May 2026

China University of Geosciences (Wuhan)

Bachelor of Engineering in Software Engineering

September 2020 – June 2024

GPA: 3.98/4 Rank: 1/111

SKILLS

- **Programming Languages:** JavaScript, TypeScript, Java, Go, Python, C++, Node.js, Kotlin, Swift, Dart, ObjC
- **Frameworks & Libraries:** React, React Native, Flutter, Next.js, Vue, SpringBoot, NestJS, Gin, Express.js
- **Infra & Middleware:** MySQL, PostgreSQL, MongoDB, Redis, Kafka, K8s, Docker, Elasticsearch, Logstash, Kibana
- **Cloud Platforms & Tools:** Linux, Git, AWS, Azure, Google Cloud, Figma, Selenium, Distributed Algorithms

PROFESSIONAL EXPERIENCE

Xiaohongshu | Leading Social Media Platform in China

Software Engineer Intern

January 2024 – May 2024

Wuhan, China

- Maintained a hybrid collaborative management platform using **React** and **Flutter**, featuring a flexible block-based editor with Slate.js. Applied CRDT algorithm to enable real-time collaborative editing and data consistency
- Engineered an open platform applying **iframe** to combine systems, boosting data circulation by 30%. Delivered a **micro-frontend** React SDK with Qiankun serving over 100,000 users, ensuring compatibility with other frameworks
- Constructed a template engine based on **Node.js**, Slate.js document structure and art-template, achieving near-optimal JavaScript rendering performance. Created an error-checking mechanism to diminish error rates and simplify debugging
- Refactored editor architecture by adopting **DI and IoC**, reducing coupling between core and services modules by 43%
- Analyzed and optimized performance bottlenecks in large document scenarios across PC, iOS, and Android platforms through **devTools**, cutting memory consumption by 21% across modules. Recorded solutions with quantitative impact

Kingsoft | Leading Office Software Company in China

Software Engineer Intern

June 2023 – August 2023

Wuhan, China

- Maintained a hybrid database-like collaborative spreadsheet serving over 1 million users built with **React** and **C++**
- Constructed scalable backend services using **Spring Boot**. Enhanced data process by integrating **Redis** Cache, achieving 35% reduction in response time. Ensured availability using **Zookeeper** for distributed configuration management
- Established an event tracking platform with **ELK** for data analysis and visualization. Integrated **Kafka** for data buffering and streaming. Devised a dashboard for data monitoring, improving data-driven decision making process
- Created a version recovery tool and designed a storage strategy to locally preserve historical versions using local storage. This prevented data inconsistencies caused by unexpected disconnections, resulting in a 13% increase in NPS
- Adhered to Agile methodologies throughout the software development life cycle, contributing to daily stand-ups, sprint planning, and retrospectives, ultimately earning the highest internship performance score within the team

PROJECT EXPERIENCE

Collaborative Office Platform

May 2024 – August 2024

- Built the platform using **Next.js**, **TailwindCSS** and **NestJS**; developed the mobile application with **React Native**
- Engineered video conference leveraging **WebRTC**. Coupled voice-to-text conversion with LLM to generate meeting summaries, lowering post-meeting processing time by 40%; provided a **GPT**-powered chat bot for intelligent Q&A
- Accomplished a document search engine using **Go** and **ElasticSearch**, leveraging parallel processing to boost indexing efficiency by 42%. Enhanced database performance by 36% through **PostgreSQL** sharding and partitioning strategies
- Architected a **monorepo** to manage multiple projects using **pnpm** and **changesets**, optimizing dependency management and ensuring consistent updates. Incorporated QA tools like Husky via **webpack**, cutting CR time by 25%
- Deployed GitLab, Selenium, SonarQube and Jenkins to establish a robust **CI/CD** pipelines, combining automated build, test, deployment and code analysis processes, reducing manual effort for operational tasks and testing by 57%

Distributed Key-Value Database System

February 2024 – May 2024

- Developed a highly available KV database based on **Go**, supporting horizontal scalability and distributed transactions
- Engineered core **Raft** protocol features, including leader election, leader transfer, log replication, one-step membership change, and snapshot. The Raft library was devised with low coupling, referencing the **etcd/raft** implementation
- Designed a **Multi-Raft** architecture with key-range partitioning, supported automatic region splitting as data grows
- Built an **MVCC**-based system for single-node and Implemented distributed transactions with the **Percolator** model