# Colin Zhang

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## Education

**University of California, San Diego**, MS in Computer Science — Sept 2023 – Mar 2025

**University of Science and Technology of China**, BS in Computer Science — Sept 2019 – Jun 2023

## Work Experience

**Tiktok**, Software Engineer Intern @System Technology Team – San Jose, CA — Jun 2024 - Sept 2024

- Spearheaded the optimization of the Google Protobuf **C++** library using Profile Driven **Optimization** techniques, reduced branch miss rate from 5% to 0.5%, reduced overall CPU usage by 10.79%.
- Constructed a robust test, benchmark and profile framework utilizing Google Benchmark, which facilitated precise performance evaluations and fostered continuous improvements across various application scenarios.
- Engineered a dynamic parsing strategy that allowed for the use of specialized parsers based on the message type and profile information, improving parsing efficiency and responsiveness. Reduced parsing time by 30%.
- Implemented a lazy parsing mechanism, which defers the parsing process until field access is required, thereby optimizing resource utilization and reducing unnecessary computational overhead.

**Suger.io (SaaS Startup)**, Software Engineer Intern - San Francisco (Remote) — Dec 2022 – Feb 2023

- Integrated AWS-generated reports into **backend** database using **Go**, implementing regular synchronizations and transforming data according to business logic to enhance data accuracy and operational efficiency.
- Engineered a comprehensive usage tracking and billing system that supports complex billing scenarios across multiple cloud platforms, increasing billing accuracy by 25% and ensuring consistent revenue collection.

**Tiktok**, Software Engineer Intern @Lark Client Team – Shenzhen, China — Jun 2022 - Sept 2022

- Separated the screenshot process from the main Lark process with **C++** and **Chromium**'s Mojo IPC, preventing critical crashes and boosting application performance. Reduced lag experience, increased robustness.
- Developed custom screenshot and image modification tools for Lark using low-level operating system APIs.
- Engineered an automation testing framework that allowed testing engineers to invoke **C++** code via **JavaScript**. This innovation significantly accelerated testing processes and improved departmental efficiency.
- Acted as oncall support, resolving over 10 critical bugs related to Lark's screenshot functionalities, addressing **cross-platform** compatibility and operating system API issues, enhancing system stability and user satisfaction.

## Selected Development Experience

**Mogan (GNU TeXmacs)**, OpenSource Contributor - Online — Jun 2023 - May 2024

- Contributed extensively to Mogan(https://github.com/XmacsLabs/mogan), a distribution of GNU TeXmacs, focusing on graphical enhancements using **C++** and **Scheme**. Resolved over 30 bugs and introduced more than 15 new features, significantly improving functionality and user experience. Many contributions have been integrated into the main GNU TeXmacs project, benefiting tens of thousands of active users.
- Developed Mogan Draw, a graphic tool within the Mogan ecosystem, producing both Linux and **WebAssembly (wasm)** editions. Managed all aspects of UI and feature development, ensuring high usability and performance.

**OS Kernel Development**, Team Leader - Hefei, China — Jan 2022 - Sept 2022

- Led a 3 member team to develop a Linux-like **kernel** from scratch using **Rust**, implementing over 50 system calls including process, memory, and file system management functions. Won third place in a national competition.

## Skills

- **Programming languages:** C++(Proficient), C, Python, Rust, Go, Haskell, Java, JavaScript, HTML5&CSS3, SQL
- **Software:** Git, Docker, Kubernetes, Kafka, RabbitMQ, MySQL, AWS, Redis, GraphQL, CI/CD, MongoDB
- **Web Development:** Node.js, Vue, React, Django, Flask, Ruby on Rails, MicroServices, Spring Boot
- **Infrastructure:** Linux Kernel, C++ Performance Optimization, Assembly, Compiler, Operating Systems