Jianxin Qiu

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Education

University of Toronto 2022 – 2023

Master's Degree of Engineering, Computer Engineering, GPA: 3.90/4.00 Toronto, Canada

Beijing University of Posts and Telecommunications 2017 – 2021

Bachelor's Degree of Engineering, Computer Science, GPA: 90.66/100 Beijing, China

Work Experience

TikTok (ByteDance), Technical Infrastructure Aug 2023 – Present

Software Engineer Singapore

AI Infrastructure

- Designed, developed, and launched the company-wide **Model Context Protocol (MCP)** gateway from scratch, enabling seamless integration of AI tools across the organization. Designed a flexible platform where teams can register REST/gRPC APIs as MCP tools, host third-party servers, or implement custom handlers programmatically, abstracting away protocol complexity, authentication, and observability concerns. Scaled the platform to host **6,000+ MCP servers** and process **2B+ requests** daily, serving as the foundational infrastructure for AI tool integration across all engineering teams.
- Engineered the **AI Sandbox platform** on the serverless infrastructure to enable on-demand, ephemeral environments for AI agents with configurable lifetimes and per-instance routing. Developed runtime daemon with remote command execution & process management, port forwarding, and browser automation capabilities, now serving 40,000+ cores daily.

Serverless Platform

- Unified on-prem and cloud control planes into a single codebase; migrated metadata for 4,000+ functions, reducing maintenance overhead and accelerating new feature delivery.
- Designed and delivered CronJob-on-Serverless, enabling existing batch workloads to run serverlessly with custom images, sidecar metrics/log collectors, and DC-aware scheduling.
- Moved the build process from self-managed build clusters to the centralized build platform, reducing complex function build times by 50% and eliminating cluster failures.

Cloud Native Infrastructure

- Built a metrics proxy layer exposing unified OpenTSDB APIs over Prometheus and internal observability systems to standardize metrics ingestion across environments.
- Developed a service-mesh-based traffic switcher with dependency tracking and automated cut-over policies, enabling zero-downtime migration of 5,000+ on-prem microservices to cloud infrastructure.

ByteDance, Lark Messenger Jun – Oct 2021

Software Engineer Intern (Rust) Beijing, China

- Worked on Lark Messenger's cross-platform Rust library powering iOS, Android, desktop, and web clients, introduced new features to the calendar component.
- Improved modularity and binary footprint through assembly-level profiling and code refactoring, reducing binary size and improving startup latency. Adopted Rust `async`/`await` patterns across shared modules to enhance reliability and maintainability.

Alibaba Cloud, ClickHouse Database Team Jul – Aug 2020

Software Engineer Intern (Java) Hangzhou, China

- Integrated ClickHouse and Apache Flink by developing a high-throughput database connector, employing optimizations like parallel direct shard writing, achieved over 5x higher throughput over the default JDBC connector.

SmartX Inc., ZBS Storage Team Sep 2019 – Jan 2020

Software Engineer Intern (C++) Beijing, China

- Enhanced the long task execution module of the distributed block storage system, implementing features like storage backup parallelization, QoS bandwidth limiting, and task status management.
- Developed Hadoop-like command-line tools for the NFS interface of the storage service.

Skills

- C, C++, Rust, Go, Python, Compiler, Linux Kernel, Serverless, Model Context Protocol (MCP), etc.
- Open-source contributions: contributed to `@rust-lang`, `@rust-analyzer`, `@rust-osdev`, etc.