

ZHENGYU CHEN

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EXPERIENCE

ByteDance - Data Agent

Shanghai, China Feb 2026 - Present

- **Multi-Agent Architecture Evolution & Long-Horizon Tasks:** Contributed to the architectural upgrade from a single-agent to a **Multi-Agent collaborative framework**. Played a core role in developing **Long-Horizon agents** based on the **ReAct architecture**, optimizing the closed-loop pipeline for multi-step reasoning and execution. Fine-tuned the Agent-to-Agent (A2A) communication protocol to enhance collaborative efficiency and system stability during complex task orchestration.
- **Browser-Use MCP Development & AIO Sandbox Optimization:** Standardized external tool integration and web interaction capabilities using the **Browser-Use MCP**. Leveraged the VNC protocol to enable autonomous web browsing, real-time video streaming, end-to-end operation recording, and history tracking for agents. Optimized the underlying **All-in-One Sandbox** to enforce hard resource isolation and runtime security, ensuring robust safety, isolation, observability, and auditability for dynamic execution and complex interactions.

Connexion Ltd - Startup

Melbourne, Australia Aug 2023 - Present

- **High-Concurrency Data Architecture Computation Offloading:** Engineered a robust storage architecture to tackle multi-tenant write bottlenecks. **Designed business-aware sharding strategies** for DynamoDB Partition Keys to ensure uniform write distribution and eliminate throttling. Architected a **Redis + DAX multi-tier caching system** with **Redis computation offloading** to decouple complex aggregations from the database, reducing P99 write latency to **180ms**.
- **Zero-Downtime Migration Event-Driven Scaling:** Spearheaded the **zero-downtime migration** of 3M+ mission-critical records from MongoDB to DynamoDB. Established **CDC real-time sync pipelines** with **shadow write verification** to guarantee 99.99% consistency. Integrated **AWS SQS + KEDA** to orchestrate event-driven autoscaling based on **queue backlog**, ensuring system stability during traffic bursts.

Amazon - SFS MFN

Beijing, China Feb 2022 - Mar 2023

- **Data Proxy Platform Architecture Optimization:** Architected the data access layer for Retail services. Mitigated connection storms by integrating **RDS Proxy** (reducing connections by **90%**) and transitioning protocols to **gRPC + Protobuf** (slashing P99 latency by **60%**). Engineered a **Binlog CDC-based Cache-Aside** system with **"Read-After-Write" Smart Routing** to resolve data inconsistencies caused by replica lag, successfully supporting million-level QPS during Black Friday.

Tencent - TiMi Studio

Guangdong, China Jan 2020 - Feb 2022

- **Gameplay System Development:** Spearheaded the design of core gameplay systems, constructing a **guild-based shared resource pool** to efficiently handle resource allocation and reclamation under high concurrency. Engineered robust data structures for complex operational events, ensuring high system stability and quality delivery.
- **Matchmaking Engine Optimization:** Identified performance bottlenecks via profiling and re-architected the engine using a **Global Object Pool + Smart Pointer Zero-Copy** design. Transformed object queues into pointer passing mechanisms to eliminate memory allocation overhead and fragmentation. Boosted QPS from 28,000 to 38,000 and reduced **P95 latency to 180ms**.
- **LSTM-Based Predictive Autoscaling:** Developed a predictive scaling system to address native HPA lag. Trained an **LSTM time-series model** on massive historical traffic data and implemented a **K8S Custom Metrics Adapter** to trigger **proactive scaling** 30 minutes in advance, increasing cluster resource utilization from 45% to 73% while maintaining strict SLAs.

EDUCATION

The University of Melbourne
Master of Information Technology
East China Normal University
Bachelor of Software Engineering

Melbourne, Australia Jul 2018 - Dec 2019

Shanghai, China Sep 2013 - Jun 2017

SKILLS

- **Languages:** C++, Java, Python, TypeScript, SQL
- **Cloud & Infrastructure:** AWS (EKS, Lambda, SQS, RDS), Kubernetes, Docker
- **Data & Storage:** DynamoDB (Design & Tuning), Redis Cluster, MongoDB, MySQL (Binlog/CDC)
- **Frameworks & Tools:** gRPC, Protobuf, Prometheus, Grafana, CI/CD, Git
- **Certifications:** [AWS Certified Solutions Architect - Professional](#)