

Zheyuan Lin

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EDUCATION

Emory University | Atlanta, GA

Bachelor of Science in Computer Science and Mathematics | August 2022 – May 2026 GPA: 3.93/4.00

Course: Distributed Systems, Cloud Architecture, Computer Networks, Database Systems, Algorithms & Data Structures, Software Engineering

SKILL

Programming Languages: Java, Python, C, C++, Go, JavaScript, TypeScript, SQL, Bash, Shell Scripting

Backend & APIs: Spring Boot, Spring Cloud, Flask, Node.js, Express.js, RESTful API, gRPC, Microservices Architecture

Distributed Systems & Messaging: Kafka, RabbitMQ, Redis (Cluster/Sentinel), Zookeeper, Event-driven Architecture, Pub/Sub

Databases & Storage: MySQL, PostgreSQL, Redis, MongoDB, PostGIS, Connection Pooling, Query Optimization, Database Indexing

Cloud & Infrastructure: Docker, Kubernetes, Helm, AWS (EC2, S3, Lambda, RDS), Azure, Google Cloud Platform

Monitoring & Observability: Prometheus, Grafana, ELK Stack, Jaeger, Distributed Tracing, APM

DevOps & CI/CD: GitHub Actions, Jenkins, Docker Compose, Infrastructure as Code, Automated Testing

EXPERIENCE

Invest ATL | Atlanta, GA

Software Development Engineer Intern | May 2025 – August 2025

- Built **ML** pipeline for affordable housing investment analysis, processing **1,860+ applications**, supporting **\$2.5M+ investment decisions**.
- Developed **PySpark ETL** extracting **40+ features** from **PDFs, APIs**, and databases with **Google Maps** and **Census** integration.
- Engineered **Flask REST API** serving predictions and feature extraction with **≤200ms P95 latency**, implementing retry logic consistently.
- Resolved **Google Maps** rate limiting using **Redis** caching, achieving **92% hit rate** with **7-day TTL** and **OpenStreetMap** fallback.
- Built a geospatial scoring system using **Shapely** for school district boundary intersection and **PostGIS** spatial queries for analysis.
- Integrated **LLM-based** parser using **GPT-4 API** for structured **PDF** extraction, improving data quality and processing efficiency.

XiaoMi Technology | Beijing, China

Software Development Engineer Intern | May 2024 – September 2024

- Built an experiment assignment service enabling **50+ product teams** running concurrent **A/B tests** using **MurmurHash3** consistent hashing.
- Implemented **100 virtual nodes** for stable user assignments and **gRPC** for low-latency communication, processing **8K+ req/s** peak.
- Implemented **DAG-based** conflict detection via topological sort, preventing invalid experiment configurations, ensuring data reliability.
- Migrated batch analytics to a real-time pipeline with **Kafka** processing **8M+ daily events** and **Redis** caching for configs.
- Reduced **P99 latency from 450ms to 85ms**, accelerating iteration cycles from **5-7 days** to same-day decisions significantly.
- Debugged production memory leak caused by unbounded message buffer, resolved via backpressure with dynamic batching reducing memory.

Bank of China | Nanjing, China

Software Development Engineer Intern | May 2023 – September 2023

- Developed workflow automation backend with **Spring Boot** and **Flowable BPMN** engine for enterprise **HR** and operations systems.
- Built a **JSON-to-BPMN** converter using recursive parsing, enabling **50+ departments** to deploy approval workflows, reducing manual effort.
- Optimized approval routing, solving **N+1 query problem** from **500+ to 12 batched queries** using **Redis** and **MyBatis** loading.
- Achieved **P95 latency ≤200ms**, processing **10K+ monthly workflow instances** with **Redis** manager hierarchy caching ensuring performance.
- Integrated workflows with **ERP** and **CRM** systems using **RabbitMQ** for async updates and **REST APIs** for synchronous queries.
- Debugged race condition with distributed locking using **Redis SETNX**, contributing to error reduction from **12% to 2%**.

PROJECTS

TDDaily | Java, Spring Cloud, Spring Boot, Kubernetes, Redis (Sentinel), MySQL, RabbitMQ, Prometheus, Grafana, Docker

- Built an analytics platform tracking **45K+ Bilibili videos** with a microservices backend using **Spring Cloud** and **Spring Boot** frameworks.
- Implemented **RabbitMQ** for async video data processing and **Redis Sentinel** for high-availability caching, improving system reliability.
- Containerized services with **Docker Compose** and deployed **Prometheus** and **Grafana** monitoring, tracking latency and throughput metrics.
- Engineered a data pipeline with **Python asyncio** and **aiohttp** for concurrent scraping, using **ThreadPoolExecutor** for parallel processing.
- Implemented two-tier caching, achieving **75% hit rate**, and resolved cache invalidation using **Redis pub/sub**, ensuring data consistency.
- Developed a recommendation engine and collaborative filtering with **cosine similarity** and **TF-IDF** content analysis, improving engagement.

Lumos Visualization Interface | Angular, TypeScript, Node.js, Express.js, Docker, PostgreSQL, WebSocket, D3.js

- Built a research platform with **Angular** and **D3.js**, studying cognitive biases in data interpretation for **CHI 2026** submission.
- Implemented **WebSocket** telemetry capturing interaction patterns, including hover timing and clicks, supporting multi-observation sessions.
- Developed bias detection computing outlier focus ratio for points **≥2σ from the mean** and **chi-square test** on the distribution.
- Resolved real-time sync for observers via **WebSocket** broadcasting, ensuring **<100ms** latency for **10+ concurrent sessions**.
- Deployed containerized services using **Docker** with **PostgreSQL** database, achieving **99.5% uptime**, supporting research data collection.
- Implemented **Connection Pooling** and **Query Optimization**, handling **5K+ interaction events/session**, ensuring scalable data persistence.