

ZECHAO CHEN

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🎓 EDUCATION

Hong Kong University of Science and Technology (Guangzhou)

Sep. 2025 –

PhD student in Data Science and Analytics.

Supervisor: Nan Tang

Chongqing University

Sep. 2024 – Jun. 2025

B.S. in Computer Science, Rank: 5 (**Top 10%**)

- Concentration in IoT engineering at the College of Computer Science.
- Relevant Coursework: Operating Systems, Computer Networks, Database Systems, Big Data Architecture and Technology, Data Structures and Algorithms, Discrete Mathematics.

🔬 RESEARCH EXPERIENCE

Data Science and Analytics Thrust, HKUST(GZ)

July. 2025 – Aug. 2025

Research Assistant Data Intelligence and Analytics Lab

- Mentors: Qianxi Zhang & Baotong Lu; Collaborators: Yaoqi Chen (USTC & MSRA), Hao Wu (NJU & MSRA), Qi Chen (MSRA Vancouver), Bailu Ding (MSR Redmond), Tianzheng Wang (SFU), etc.
- Research Topics: Vector database systems; LLM security.

Microsoft Research Asia (MSRA)

Oct. 2024 – Apr. 2025

Research Intern Systems Research Group

- Mentors: Qianxi Zhang & Baotong Lu; Collaborators: Yaoqi Chen (USTC & MSRA), Hao Wu (NJU & MSRA), Qi Chen (MSRA Vancouver), Bailu Ding (MSR Redmond), Tianzheng Wang (SFU), etc.
- Research Topics: Vector database systems; LLM security.

CQU Computer Science School

Sep. 2022 – Aug. 2024

Undergraduate Researcher Start-Lab

- Mentor: Ruiyuan Li; Collaborators: Chao Chen (CQU), Jie Bao (JD iCity, JD Technology), Yu Zheng (JD iCity, JD Technology; *IEEE Fellow*), etc.
- Research Topics: Time series data compression; Trajectory index based on key-value stores; Distributed spatial-temporal clustering.

🔧 PROJECT EXPERIENCE

Microsoft VBase

Nov. 2024 - Apr. 2025

Maintainer Research Project

MSVBASE is a system that efficiently supports complex queries of both approximate similarity search and relational operators. It integrates high-dimensional vector indices into PostgreSQL, a relational database to facilitate complex approximate similarity queries.

- Completed computing rules of special corner case.
- Fixed bugs in complex vector expression.

Serf: Streaming Error-Bounded Floating-Point Compression

Mar. 2024 – Jun. 2024

The 2nd Author Research Paper

Serf is a floating-point compression algorithm for streaming computing scenarios. Its main ideas consist of quantization encoding and error-bounded approximation. It has excellent compression performance under small data batch. (ACM SIGMOD 2025 **Accepted**)

- Designed and implemented the algorithm, handled with data acquisition and cleaning, plotting, and writing of the experiment part.
- Applied the algorithm to PyTorch to accelerate distributed model training which gained better performance in some edge computing scenarios.

Start: A Spatial-Temporal Data Management Framework

Feb. 2023 – Feb. 2024

Full stack developer Research Project

Start-DB is a distributed spatial-temporal data management and mining system. Its main features include unified multi-execution engine and native support for spatial-temporal data storage and mining. This project is a joint research and development project between Start-Lab and Guangzhou Urban Planning and Design Survey Research Institute.

- Implemented the trajectory index module, assisted in the implementation of the UDF global automatic registration mechanism, and other parsing and storage work.
- Led the front-end web development (prototype design, technology selection, basic framework and partial implementation)
- Led the back-end service program development (overall interface design, partial implementation and clusters deployment.)

UniBase

Jul. 2023 – Sep. 2023

Indie developer Experimental framework for database systems curriculum of Hongshen class

UniBase is an RDBMS used for teaching. The corresponding course labs refer to the BusTub of the CMU15-445 course. UniBase shows all modules of a general database system in a very simple structure.

- Designed and implemented the system independently.

LEADERSHIP

CQU Database Systems Course Group of Hongshen Class

Sep. 2023 - Jun. 2024

Teaching Assistant & Main Developer

- Designed and implemented independently UniBase, which is used as the basic framework for course labs.
- Worked as a teaching assistant for the Fall Semester (2023).

CQU Database and Data Mining Association

Nov. 2023 - Jun. 2025

Chairman & member of the committee

- Designed the management structure and invited about 10 Ph.D. students to construct the research group in which students share their ideas on state-of-the-art research areas.

SELECTED HONORS AND AWARDS

<i>Outstanding Graduate</i> , Chongqing University	Sep. 2024
<i>3rd Prize in Finalists</i> , National Computer System Development Capability Competition (Database Management System Design Track)	Aug. 2024
<i>3rd Prize in Finalists</i> , National Computer Design Competition (Big Data Application Track)	Jul. 2024
<i>Comprehensive Quality Scholarship</i> , Chongqing University	Mar. 2024
<i>1st Place in Chongqing</i> , National Computer System Development Capability Competition (OceanBase DBMS Track)	Nov. 2023
<i>Outstanding Student</i> , Chongqing University	Oct. 2023
<i>3rd Prize in Excellent Campers</i> , CCF China Database Summer School (VLDB Summer School)	Jul. 2023
<i>Finalist</i> , The Linux Foundation Asia-Pacific Open Source Talent Incentive Program	Dec. 2022
<i>Silver Medal</i> , The National College Students "Internet Plus" Innovation and Entrepreneurship Competition in Chongqing University	Jul. 2022

SKILLS

- Programming Language: C/C++ >= Python >= Java > Rust
- System Maintenance: Linux / Bash / Docker / K8s
- Writing: LaTeX / Markdown / MS Word
- Language: English (Fluent), Mandarin (Native), and Cantonese (Native).