Zikai Wang

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Education

Northeastern University, Khoury College of Computer Sciences — Boston, USA
Ph.D in Computer Sciences — *Sep 2024 - Present*

Renmin University of China (RUC), School of Information — Beijing, China
M.S. in Computer Application Technology, Advisor: Yunpeng Chai — *Sep 2021 - Jun 2024*

Renmin University of China (RUC), School of Information — Beijing, China
B.S. in Data Science and Big Data Technology — *Sep 2017 - Jun 2021*

Research Interests

- System Verification and Verifiable Systems
- Reliable Machine Learning Systems

Research Experience

Robustness of Vector Index (Python and C++) — Beijing
Advisor: Qianxi Zhang; Microsoft Research Asia — *May 2024 - Aug 2024*
- Proposed a metric **robustness** to measure the recall distribution of vector indices.
- Provided index selection and tuning guidelines based on the **robusntess** metric.

Scalable Database System on Disaggregated Memory System (C++) — Remote
Advisor: Prof. Carsten Binnig, Dr. Tobias Ziegler; TU Darmstadt, Germany — *Mar 2023 - May 2024*
- Designed a globally shared cache mechanism for the distributed shared-caching memory
- Constructed a transactional database above RDMA-supported distributed system

Rethink the Linearizability Constraints of Raft for Distributed Key-Value Stores (Go) — Beijing
Advisor: Prof. Yunpeng Chai, Dr. Yangyang Wang; Renmin Univ. of China — *Mar 2020 - Oct 2020*
- We revisited the linearizability constraints of Raft in-depth and found that some of them can be broken to accelerate the performance significantly without breaking the linear consistency for distributed key-value storage systems.

Publication

Towards Robustness: A Critique of Current Vector Database Assessments — Arxiv, 2025
***Zikai Wang**, Qianxi Zhang, Baotong Lu, Qi Chen, Cheng Tan*

Rethink the Linearizability Constraints of Raft for Distributed Key-Value Stores — ICDE'21
*Yangyang Wang, **Zikai Wang**, Yunpeng Chai, Xin Wang*

Professional Experience

Microsoft Research — Beijing
Research Intern — *May 2024 - Aug 2024*
- Study the robustness problem of vector indexes

Tencent Inc. — Beijing
Research Intern — *Sep 2020 - Sep 2022*
- Provided heterogeneous multiple replicas supports for TDSQL3, a commercial distributed HTAP database in C++ developed by Tencent.
- Proposed a workload-aware storage model based on the key-value storage engine of TDSQL3.
- Programming Language: C++

Extracurricular Activities

VLDB Summer School 2021 — Haikou, Hainan, China
Jan 2022
- **Awards:** Outstanding Student