ZHIHAN GUO

zhihan@cs.wisc.edu | 608-692-2091

RESEARCH INTERESTS

Database Systems, with a focus on transaction processing, distributed and parallel databases

EDUCATION

Ph.D. in Computer Science, UW-Madison / 2018.09 – 2022.05 (expected)
advised by Professor Xiangyao Yu, GPA: 3.95/4.00

B.S. (Hons.) in Computer Science, UW-Madison / 2015.09 – 2018.05
GPA: Overall 3.94/4.00; Major 3.96/4.00

RESEARCH EXPERIENCE

UW Madison Database Group / 2018.02-Present

Improving Two-Phase Locking to Reduce Contention with Hotspots
advised by Prof. Xiangyao Yu

Proposed a new concurrency control protocol and three optimization techniques as an extension to 2PL to increase concurrency when hotspots are present.

One-phase Commit with Globally Accessible Logs
advised by Prof. Xiangyao Yu

Addressed the blocking issue and reduced one phase in two-phase commit by leveraging the accessibility to logs for systems with disaggregated storage and computing.

HATtrick: a HTAP Benchmark Suite
advised by Prof. Jignesh Patel and Prof. Xiangyao Yu, collaborated with Elena Milkai, Yannis Chronis, and Kevin Graffney

Developing a benchmark suite to evaluate different HTAP systems on critical metrics like throughput, latency, resource sharing, and freshness.

Learning Functional Dependencies over Noisy Data via Sparse Regression
advised by Prof. Theodoros Rekatsinas

Proposed a new FD discovery approach over noisy data by casting the problem as structure learning over probabilistic graphical model and solving the model through sparse regression.

Wisconsin Human-Computer Interaction Laboratory / 2017.02 – 2018.05

Robots Providing Emotional Support (Senior Honors Thesis)
advised by Prof. Bilge Mutlu

Used a programmable commercial robot to study if non-humanoid robot with non-language vocalization can act as a listener in social sharing process and help reduce negative effects.

Child Emotion Lab / 2016.01 – 2017.09

Facial Cues for Emotion Recognition
supervised by Brian Letizke, directed by Prof. Seth Pollak
Communicated with parents and children from local community; Conducted psychological experiments and collected physiological data.

PUBLICATIONS

Cornus: One-Phase Commit for Cloud Databases with Storage Disaggregation,

Zhihan Guo*, Xinyu Zeng*, Ziwei Ren, Xiangyao Yu, under submission

Improving Locking Protocol to Reduce Contention with Hotspots,

Zhihan Guo et al., under revision to SIGMOD 2021 (title altered due to double-blind)

The Storage Hierarchy is Not a Hierarchy: Optimizing Caching on Modern Storage Devices with Orthus

Kan Wu, Zhihan Guo, Guanzhou Hu, Kaiwei Tu, Ramnatthan Alagappan, Rathijit Sen, Kwanghyun Park, Andrea Arpaci-Dusseau, Remzi Arpaci-Dusseau, FAST 2021

A Statistical Perspective on Discovering Functional Dependencies in Noisy Data,

Yunjia Zhang, Zhihan Guo, Theodoros Rekatsinas, SIGMOD 2020

Unsupervised Functional Dependency Discovery for Data Preparation,

Zhihan Guo, Theodoros Rekatsinas, ICLR, Learning from Limited Data Workshop 2019

AWARDS AND ACKNOWLEDGEMENTS

Dean's List (repeated), UW-Madison / Fall 2015 – Spring 2018

UW-Madison Undergraduate Scholarship for Summer Study, UW-Madison / Summer 2016

First-class Scholarship for Excellent Academic Performance (2013-2014), BLCU / Fall 2014

Excellent Leadership Award, BLCU / Spring 2014

TEACHING EXPERIENCE

Teaching Assistant for Database Management Systems, UW-Madison / Fall 2019

Supervised by Professor Goetz Graefe

SKILLS & RELEVANT COURSEWORK

Programming language: C++, C, Python, Java, MATLAB.

Relevant coursework: database, operating system, distributed system, machine learning. computer architecture