YUYUAN KANG

(1 (608) 628-7498;

Computer Sciences Department, University of Wisconsin-Madison, Madison, US

 \bowtie yuyuan@cs.wisc.edu;

EDUCATION	
University of Wisconsin-Madison	Madison, US
Ph.D. in Computer Science	Aug. 2022 – Present
Tsinghua University	Beijing, China
Master of Engineering, Software Engineering	Sep. 2019 – Jun. 2022
Advisor: Prof. Jianmin Wang	
• Thesis: Research on the Write Amplification of the Log-Structured Merge-Tree in IoTDB	
Northeastern University	Shenyang, China
Bachelor of Engineering, Software Engineering	Sep. 2015 – Jun. 2019

PUBLICATIONS

- 1. Lei Rui, Xiangdong Huang, Shaoxu Song, **Yuyuan Kang**, Chen Wang, Jianmin Wang, "Time Series Representation for Visualization in Apache IoTDB", (SIGMOD 2024, accepted)
- Yuyuan Kang, Xiangdong Huang, Shaoxu Song, Lingzhe Zhang, Jialin Qiao, Chen Wang, Jianmin Wang, and Julian Feinauer. "Separation or Not: On Handing Out-of-Order Time-Series Data in Leveled LSM-Tree." In International Conference on Data Engineering (ICDE), pp. 3340-3352. IEEE, 2022.
- Jialin Qiao, Yuyuan Kang, Xiangdong Huang, Lei Rui, Tian Jiang, Jianmin Wang, and S. Yu Philip. "Heterogeneous Replicas for Multi-dimensional Data Management." In *International Conference on Database Systems for Advanced Applications* (DASFAA), pp. 20-36. Springer, Cham, 2020.

RESEARCH EXPERIENCE	
University of Wisconsin-Madison	Madison, WI, USA
Independent Study, working with Prof. Ming Liu	Feb 2024 – present
 Understanding and optimizing NVMe-over-TCP in Linux 	
Independent Study, worked with Prof. Tej Chajed	Aug 2023 – Dec 2023
 Verifying the backward compatibility of Cap'n Proto 	
Independent Study, worked with Prof. Xiangyao Yu	Sep. 2022 – May 2023
• Designing new deterministic database systems for more functionality and	high performance.

Tsinghua University (National Engineering Laboratory for Big Data Software) Research Assistant, advised by Prof. Jianmin Wang

Apache IoTDB

- In stand-alone version: optimized the execution of the query plan in order to reduce the delay by 10 percent; implemented data compression of communication between client and server; designed and implemented the syntax definition and parsing logic of IoTDB SQL based on ANTLR V4.
- *In* distributed *version*: designed two thresholds in order to control the number of logs in memory; implemented the execution of DDL in distributed scenarios which was based on the Raft protocol; designed and implemented the function to automatically register time series when inserting data.
- Committed more than 60 pull requests. Became an Apache Committe; Edited videos and made subtitles for ApacheCon Asia, 2021.

Tsinghua University (National Engineering Laboratory for Big Data Software) Software Enginee

Design and Implementation of IoTDB-Oriented Writing System

- Requirement engineering, communicated with Tianyuan Technology Co., Ltd., sorted out time series storage requirements and wrote various types of requirement documents.
- Designed several schemas based on IoTDB and recorded meeting minutes; completed schema design document.
- Implemented and delivered the program according to the design, as well as the data migration document, IoTDB deployment document, API replacement document, and performance report.
- Provided technical support and system maintenance, deployed 10 IoTDB instances; managed 170,000 vehicles and 33 million time series; supported a full spectrum of services to the Tianyuan Technology Co., Ltd.

Tsinghua University

Independent study, advised by Prof. Jianmin Wang Reinforcement Learning for Designing Optimal Self-Similar Curve-Based Index Beijing, China Dec. 2020 – Mar. 2021

Beijing, China

Beijing, China

Nov. 2020 - May 2021

Sep. 2018 – Jun. 2022

- Implemented a program that determines the order of the grid in a multi-dimensional space given a basic pattern. The self-similar transformations include symmetry and rotation, so that traditional curves such as the Hilbertcurve and the Z-ordering curve are inside the search space.
- Proposed a cost model to evaluate a given self-similar curve-based index design and query workload. ٠
- Adopted reinforcement learning to optimize the basic pattern of the index so that the cost is minimized, given a target query workload.

Northeastern University (School of Software) Shenyang, China Team Leader, Research Assistant, advised by Prof. Tao Ren Nov. 2016 - May 2018 **Immersive and Intelligent Humanoid Robot Control System** Designed and implemented a gesture control system in order to manipulate the robot actuators with obtained ٠ human motion data through Kinect, in an attempt to make the robot imitate human behavior.

- Proposed a method (Apriori + YOLO v3) to predict the possible location of an object when it is not visible, so • that the robot can be able to easily find the target object.
- Registered one software copyright (nationwide). ٠

Northeastern University (School of Software)

Independent study, advised by Prof. Tao Ren **Teaching demonstration system**

- Independently implemented a database management system, which supported the operators, including insert, delete, update and select.
- Designed and implemented UI for the database management system. •
- The project was put into use at the college.

SELECTED AWARDS AND HONORS

• (Graduate with honors, School of Software, Tsinghua University	2022
• 1	1st Prize Scholarship of the Tsinghua University	2021
• 1	Excellent Graduation Thesis of the Northeastern University	2019
• (Graduate with Honor out of the graduates of Liaoning Provincial Institutions of Higher Learning (top S	5%)2019
• 1	Meritorious Winner of the Mathematical Contest in Modeling (COMAP)	2018
• I	Exceptional Funding of the Nation (China), Top 5%, National Innovation Training Program for College Students	2018
• I	Exemplary Undergraduate at Shenyang (only 1 in the college of more than 1,600 students)	2018
• 2	2nd Prize, Nationwide "Innovation has a future" University AI Innovation Grand Competition	2018
• (Gold Award, China College Students' Entrepreneurship Competition in Liaoning Province (top 5%)	2018
• 1	1st Prize, National Competition for Software and Information Technology Professionals in Liaoning	2018
• 2	2nd Prize Scholarship of the Northeastern University (Academic Merit)	2018
• I	Honorable Mention of the Mathematical Contest in Modeling (COMAP)	2017
• (Outstanding Student Cadres (Pacesetters) of Northeastern University (top 1%)	2017
• 2	2nd Prize Scholarship of the Northeastern University (Academic Merit)	2017
• 5	Suzhou Industrial Park Scholarship	2017
• 1	1st Prize Scholarship of the Northeastern University (Academic Merit)	2016
• 2	2nd Prize, Mathematical Contest in Modeling, Liaoning Province	2016
• 1	National Scholarship (top 1%)	2016

ADDITIONAL EXPERIENCE

Teaching

•	CS300 - PROGRAMMING II, UW-Madison	Spring 2024
•	CS407 - Foundations of Mobile Systems and Applications, UW-Madison	Fall 2023
	Designed lab (sensor data processing), designed pre-lab and mid-term quizzes, graded assignmen projects.	ts and final
•	Principal of Database, Tsinghua University	Spring 2021
	Introduced storage and indexing in the database based on HSQL; introduced LSM-Tree structure;	;
	graded undergraduates' homework; designed practice tasks.	

Skills

- Programming: Java, Python, C/C++, SQL, MATLAB, FStar, Coq
- Languages: Chinese (native), English.

Jun. 2016 – Jul. 2016

Shenyang, China