YUYUAN KANG

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EDUCATION

University of Wisconsin-Madison Madison, US
Ph.D. in Computer Science Aug. 2022 – Present
- Advisor: Prof. Xiangyao Yu

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
- Advisor: Prof. Tao Ren

PUBLICATIONS

1. **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 I*nternational Conference on Data Engineering* (ICDE), pp. 3340-3352. IEEE, 2022.
2. 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
Research Assistant, advised by Prof. Xiangyao Yu Sep. 2022 – Present
Transaction Processing and Cloud-Native Database
- Studying the difference on the performance and the causes among concurrency control protocols.

Tsinghua University (National Engineering Laboratory for Big Data Software) Beijing, China
Research Assistant, advised by Prof. Jianmin Wang Sep. 2018 – Jun. 2022
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 Committer (Apache User ID: YuyuanKang); Edited videos and made subtitles for ApacheCon Asia, 2021.

Tsinghua-Tianyuan Technology Co., Ltd. Big Data Technology Joint Research Center Beijing, China
Software Engineer Nov. 2020 – May 2021
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 Beijing, China
Independent study, advised by Prof. Jianmin Wang Dec. 2020 – Mar. 2021
Reinforcement Learning for Designing Optimal Self-Similar Curve-Based Index
- 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 Hilbert-curve 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.

- 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 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).

Northeastern University (School of Software) Shenyang, China
Independent study, advised by Prof. Tao Ren Jun. 2016 – Jul. 2016
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
- 1st Prize Scholarship of the Tsinghua University 2021
- Excellent Graduation Thesis of the Northeastern University 2019
- Graduate with Honor out of the graduates of Liaoning Provincial Institutions of Higher Learning (top 5%) 2019
- Meritorious Winner of the Mathematical Contest in Modeling (COMAP) 2018
- Exceptional Funding of the Nation (China), Top 5%, National Innovation Training Program for College Students 2018
- Exemplary Undergraduate at Shenyang (only 1 in the college of more than 1,600 students) 2018
- 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
- 1st Prize, National Competition for Software and Information Technology Professionals in Liaoning 2018
- 2nd Prize Scholarship of the Northeastern University (Academic Merit) 2018
- Honorable Mention of the Mathematical Contest in Modeling (COMAP) 2017
- Outstanding Student Cadres (Pacesetters) of Northeastern University (top 1%) 2017
- 2nd Prize Scholarship of the Northeastern University (Academic Merit) 2017
- Suzhou Industrial Park Scholarship 2017
- 1st Prize Scholarship of the Northeastern University (Academic Merit) 2016
- 2nd Prize, Mathematical Contest in Modeling, Liaoning Province 2016
- National Scholarship (top 1%) 2016

ADDITIONAL EXPERIENCE

Teaching

- Teaching Assistant, *Principal of Database*, Tsinghua University 2021
  Introduced storage and indexing in the database based on HSQL; introduced LSM-Tree structure; graded undergraduates' homework; designed practice tasks.

Additional Professional and Extracurricular Experiences

- Vice-Chairman, Graduate Student Association of School of Software, Tsinghua University 2020
- Volunteer, The Second "Peace Cup" International Youth Football Invitational Tournament 2016

Interests

- *Chorus:* was part of the World Peace Choral Festival, Vienna, 2013; joined the choir of Northeastern University.
- *Video post-processing:* was involved in making a video to celebrate the 20th anniversary of the School of Software at the Tsinghua University; was also involved in making videos for the student science and technology festival at the Northeastern University.

Skills

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