ZHUOYUE ZHAO

338I Davis Hall, Buffalo, NY, 14260
zzhao35 [at] buffalo.edu ⋄ https://cse.buffalo.edu/~zzhao35/

RESEARCH INTEREST

My current research interest is in database management systems. Specifically, my current focus is on query processing and query optimization, database on modern hardware, transaction processing, indexing and storage.

EDUCATION

University of Utah August 2016 - August, 2021
Ph.D. in Computer Science
School of Computing
Advisor: Prof. Feifei Li and Prof. Jeff Phillips
Thesis research: Approximate Query Processing via Random Sampling

Shanghai Jiao Tong University Sept. 2012 - July 2016
B.S.E. in Computer Science and Technology (SJTU ACM Class)
Zhiyuan College

PROFESSIONAL EXPERIENCE

1. Assistant Professor, Department of Computer Science and Engineering, University at Buffalo, Buffalo, NY. 8/2021 - present.
2. PhD student & Research Assistant, School of Computing, University of Utah, 8/2016-2021.
3. Research Intern, SysInfra Performance, Google, 5/2020 - 8/2020.
4. Research Intern, Database department, Alibaba Group, 5/2019-8/2019.
5. Research Intern, DMX Group, Microsoft Research, 5/2018 - 8/2018 and 5/2017-8/2017.
6. Research Assistant, Department of Computing, The Hong Kong Polytechnic University, 8/2015-1/2016.
7. Research Assistant, ADAPT lab, Shanghai Jiao Tong University, 8/2014-5/2016.

AWARDS AND HONORS

1. SIGMOD Distinguished PC Member 2026
2. Best Paper Award, ACM SIGMOD 2025
3. NSF CAREER Award 2024
4. IEEE ICDE Outstanding Reviewer 2024
5. VLDB Distinguished Reviewer 2023
6. Google PhD Fellowship 2019
7. Best Paper Award, ACM SIGMOD 2016
8. Zhiyuan Scholarship, Zhiyuan College, Shanghai Jiao Tong University 2016
9. Kaiyuan Scholarship, Zhiyuan College, Shanghai Jiao Tong University 2014

10. First Prize, National Olympiad in Informatics in Province (NOIP) 2011

GRANTS

1. CAREER: Speedy and Reliable Approximate Queries in Hybrid Transactional/Analytical Systems. Single PI, NSF IIS/III, 5/15/2024 - 04/30/2029, $599,977.
2. UB Undergraduate Research and Creative Activities Program 2025 - Round 3. Single PI, University at Buffalo, 1/1/2026 - 12/31/2026, $9,500.
3. Unrestricted Google Gift. Single PI, November 2021, $30,000.

PUBLICATIONS

*: Authors in alphabetic ordering; ___: students.

1. (To appear) OptiAQP: Index-Assisted Stratified Sampling for Online Aggregation, by Yunnan Yu, Al Amin Tushar, **Zhuoyue Zhao**. In Proceedings of the 43rd IEEE International Conference on Data Engineering (**ICDE 2027**), pages TBA, Copenhagen, Denmark, 2027.
2. Generic and Easy Method to Update Static Text Indexes, by Jaroslaw Zola, Andrew Mikalsen, Devendra Rana, Dong Xie, Douglas Rumbaugh, **Zhuoyue Zhao**. In Proceedings of the 17th ACM International Conference on Bioinformatics, Computational Biology, and Health Informatics (**BCB 2026**), Article No. 33, Pages 1 - 10, Rende (Cosenza), Italy, June 2026.
3. Analytics Are Heavy. The DBMS Is Busy. When Will My Mission-Critical Transaction Start Running? by Jiatang Zhou, Kaisong Huang, **Zhuoyue Zhao**, Dong Xie, Tianzheng Wang. In Proceedings of the VLDB Endowment, Volume 18, Issue 12 (**VLDB 2025**), Demo Paper, Pages 5299 - 5302, London, United Kingdom, September 2025.
4. Low-Latency Transaction Scheduling via Userspace Interrupts: Why Wait or Yield When You Can Preempt? by Kaisong Huang, Jiatang Zhou, **Zhuoyue Zhao**, Dong Xie, Tianzheng Wang. In Proceedings of the ACM on Management of Data (**SIGMOD 2025, Best Paper Award**), Volume 3, Issue 3, Pages 1 - 25, Berlin, Germany, June 2025.
5. FastPDB: Towards Bag-Probabilistic Queries at Interactive Speeds, by Aaron Huber, Oliver Kennedy, Atri Rudra, **Zhuoyue Zhao**, Su Feng, Boris Glavic. In Proceedings of the ACM on Management of Data (**SIGMOD 2025**), Volume 3, Issue 1, Pages 1 - 25, Berlin, Germany, June 2025.
6. Towards Systematic Index Dynamization, by Douglas Rumbaugh, Dong Xie, **Zhuoyue Zhao**. In Proceedings of VLDB Endowment, Volume 17, Issue 11 (**VLDB 2024**), Pages 2867-2879, Guangzhou, China, August 2024.
7. GLIN: A Generic Learned Indexing Mechanism for Complex Geometries, by Congying Wang, Jia Yu, **Zhuoyue Zhao**. In Proceedings of the 11th ACM SIGSPATIAL International Workshop on Analytics for Big Geospatial Data (**BigSpatial '23**), Pages 1-12, Hamburg, Germany, November 2023.
8. Approximate Queries over Concurrent Updates, by Congying Wang, Nithin Sastry Tellapuri, Sphoorthi Keshannagari, Dylan Zinsley, **Zhuoyue Zhao**, Dong Xie. In Proceedings of VLDB Endowment, Volume 16, Issue 12 (**VLDB 2023**), Demo Paper, Pages 3986-3989, Vancouver, Canada, August 2023.
9. AB-tree: index for concurrent random sampling and updates, by **Zhuoyue Zhao**, Dong Xie, Feifei Li. In Proceedings of VLDB Endowment, Volume 15, Issue 9 (**VLDB 2022**), Pages 1835-1847, Sydney, Australia, Sept 2022.

10. At-the-time and Back-in-time Persistent Sketches, by Benwei Shi, **Zhuoyue Zhao**, Yanqing Peng, Feifei Li, Jeffery Phillips. In Proceedings of 40th ACM SIGMOD International Conference on Management of Data (**SIGMOD 2021**), Pages 1623-1636, Xi'an, Shaanxi, China, June 2021.
11. Efficient Join Synopsis Maintenance for Data Warehouse, by **Zhuoyue Zhao**, Feifei Li, Yuxi Liu. In Proceedings of 39th ACM SIGMOD International Conference on Management of Data (**SIGMOD 2020**), Pages 2027-2042, Portland, USA, June 2020.
12. SolarDB: Towards a Shared-Everything Database on Distributed Log-Structured Storage, by Tao Zhu, **Zhuoyue Zhao**, Feifei Li, Weining Qian, Aoying Zhou, Dong Xie, Ryan Stutsman, Haining Li, Huiqi Hu. In ACM Transactions on Storage (**TOS**), Volume 15, Issue 2, June 2019.
13. *Wander Join and XDB: Online Aggregation via Random Walks, by Feifei Li, Bin Wu, Ke Yi, **Zhuoyue Zhao**. In ACM Transactions on Database Systems (**TODS**), Volume 44, Issue 1, Article No. 2, January 2019.
14. InferSpark: Statistical Inference at Scale, by **Zhuoyue Zhao**, Jialing Pei, Kenny Zhu, Eric Lo, Chris Liu. In 2019 IEEE International Conference on Big Data and Smart Computing (**BigComp 2019**), Pages 1-8, Kyoto, Japan, February 2019.
15. Solar: Towards a Shared-Everything Database on Distributed Log-Structured Storage, by Tao Zhu, **Zhuoyue Zhao**, Feifei Li, Weining Qian, Aoying Zhou, Dong Xie, Ryan Stutsman, Haining Li, Huiqi Hu. In Proceedings of the 2018 USENIX Annual Technical Conference (**ATC 2018**), Pages 795-807, Boston, USA, July 2018.
16. Random Sampling over Joins Revisited, by **Zhuoyue Zhao**, Robert Christensen, Feifei Li, Xiao Hu, Ke Yi. In Proceedings of 37th ACM SIGMOD International Conference on Management of Data (**SIGMOD 2018**), Pages 1525-1539, Houston, USA, June 2018.
17. *Wander Join and XDB: Online Aggregation via Random Walks, by Feifei Li, Bin Wu, Ke Yi, **Zhuoyue Zhao**. In **SIGMOD Record**, Volume 44, Number 1, Pages 33-40, May 2017.
18. *Wander Join: Online Aggregation via Random Walks, by Feifei Li, Bin Wu, Ke Yi, **Zhuoyue Zhao**. In Proceedings of 35th ACM SIGMOD International Conference on Management of Data (**SIGMOD 2016, Best Paper Award**), Pages 615-629, San Francisco, USA, June 2016.
19. *Wander Join: Online Aggregation for Joins, by Feifei Li, Bin Wu, Ke Yi, **Zhuoyue Zhao**. In Proceedings of 35th ACM SIGMOD International Conference on Management of Data, Demo Paper, (**SIGMOD 2016**), Pages 2121-2124, San Francisco, USA, June 2016.

PROFESSIONAL SERVICES

1. Panelist, NSF Review Panel, 2026.
2. PC member, ACM SIGMOD 2023-2026 (research), 2026 (demo)
3. PC member, VLDB 2023-2026
4. Panelist, Two NSF Review Panels, 2024.
5. PC member, IEEE ICDE 2022, 2024-2027.
6. PC member, IEEE ICDE, demo track, 2023.
7. Review Board member, VLDB Journal, 2025 - 2027.
8. Invited Reviewer for VLDB Journal, May 2022, Jul 2023, Jan 2024, Oct 2024.
9. Proceedings Chair, ACM SIGMOD 2023.
10. PC member, IEEE ICPADS 2022, 2023.

11. Invited reviewer for ACM Transactions on Database Systems (TODS), Jan 2022, Oct 2023, Apr 2024.
12. PC member, International Workshop on Big Data in Emergent Distributed Environments (BiDEDE), 2021 2022, 2023, 2024.
13. Invited reviewer for IEEE Transactions on Knowledge and Data Engineering (TKDE), 2017.

TEACHING

1. Instructor, CSE 610: Special Topics, AI-assisted System Programming Practice: Build a Query Optimizer, Fall 2026.
2. Instructor, CSE 350: Advanced Data Structures and Indexes, Spring 2026.
3. Instructor, CSE 302/303/402: Experiential Learning/Research, University at Buffalo, Fall 2025.
4. Instructor, CSE 462/562: Database Systems, University at Buffalo, Spring 2022, Spring 2023, Spring 2024, Fall 2024
5. Instructor, CSE 662: Languages and Runtimes for Big Data, University at Buffalo, Fall 2023, Fall 2024.
6. Instructor, CSE 707: Seminar on Modern Database Systems, University at Buffalo, Fall 2021, Fall 2022
7. Instructor, CS 6530: Database Systems, University of Utah, Fall 2018
8. Teaching Assistant, CS6530 Database Systems, University of Utah, Fall 2017
9. Teaching Assistant, Database Systems, Shanghai Jiao Tong University, Spring 2016
10. Teaching Assistant, Introduction to Computer Science (Logic and Combinatorics), Shanghai Jiao Tong University, Fall 2015
11. Teaching Assistant, Principle and Practice of Computer Algorithms, Shanghai Jiao Tong University, Summer 2014

STUDENT SUPERVISION

PhD students

· Yunnan Yu, Feb 2021 - present, degree expected in August 2027.
· Gaoxiang Liu (co-advised with Prof. Ziming Zhao @ Northeastern University), Aug 2023 - present, degree expected in August 2027.
· Zhuoran Li, Aug 2025 - present, degree expected in May 2030.

Master students

· Nithin Sastry Tellapuri, Feb 2022 - Feb 2024, "Design of Standalone Library of Aggregate B-tree Index for Random Sampling".
· Sphoorthi Keshannagari, Dec 2022 - Mar 2024, "Approximate Queries over Concurrent Updates".
· Sai Kiran Angalakudhiti, Aug 2023 - May 2024, "SIMD Acceleration of Bloom Filter".
· Anirudh Nallana, Fall 2024 - Spring 2025, "x86-64 user interrupt driver".
· Geetansh Kumar, Summer 2025 - Spring 2026, "Evaluating Variance and Reliability of Semantic Operators under Ambiguous Queries in LOTUS".
· Devandra Pratap Singh Rana, Summer 2025 - Spring 2026, "Generic and Easy Method to Update Static Text Indexes".
· Congying Wang, Feb 2023 - Summer 2026.

Undergraduate students

· Dylan Zinsley, Fall 2021 - Spring 2023, "Approximate Queries over Concurrent Updates".
· Linyu Wu, Fall 2023 - Summer 2025, remote research intern.
· Michael Beards, Fall 2024 - Summer 2025, "x86-64 user interrupt driver".
· Al Amin Tushar, Fall 2025 - present.
· Shreyansh Tehanguria (Purdue University), Summer 2026, "Integrating sampling index in DuckDB".
· Jiaye Li, Summer 2026, "Finding memory bugs in database extensions".

DEPARTMENTAL AND UNIVERSITY SERVICES

1. Member of Community Education Outreach (CSExplore) Committee, 2023 - present
2. Member of CSE graduate admission committee, 2021 - 2024, 2025 - present
3. Vice Chair of CSE graduate admission committee, 2024 - 2025
4. Chair of CSE UpBeat and Colloquium committee, 2022 - 2023.
5. Member of CSE UpBeat and Colloquium committee, 2021 - 2022, 2024 - 2025