Yiwei ZHAO | 赵奕炜

Curriculum Vitae

Carnegie Mellon University
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Last modified in January 2024

RESEARCH INTERESTS

Parallel & Distributed Computing, Databases, MLSys, Algorithms & Data Structures, Computer Architecture, Graph Processing, Computational Geometry.

EDUCATION

Carnegie Mellon University, Pittsburgh, Pennsylvania, 2021-present.

- Ph.D. candidate.
- Primary Advisor: Prof. Phillip B. Gibbons.

Tsinghua University, Beijing, China, 2017-2021.

- B.E. in Electronic Engineering. Graduated summa cum laude.
- Double major in Economics & Finance.
- **Overall GPA**: 3.9/4.0 **Ranking**: Top 3%

HONORS & AWARDS

- Qualcomm PhD Fellowship Finalist (2024) [Currently Under Final Round Review].
- Best Paper Runner-up, VLDB (2023).
- IBM PhD Fellowship Finalist (2023).
- Excellence Honor for Undergraduate, Tsinghua University & Ministry of Education of Beijing (2021).
- Top Prize in Shuping Scholarship for College Students, Shuping Foundation (2020)
- China National Scholarship, Ministry of Education of China (2018 & 2019).
- Scholarship of Excellent Comprehensive Performance, Tsinghua University (2018 & 2019).
- Advanced Individual of Social Practice, Tsinghua University (2018 & 2020).
- Advanced Individual of Academic Excellence, Tsinghua University (2018).
- First Prize in Shuping Scholarship for College Students, Shuping Foundation (2018 & 2019).
- Second Prize in the 35th China Regional College Student Physics Contest, Beijing Physical Society (2018).
- Shuping Scholarship for College Freshmen, Shuping Foundation (2017).

RESEARCH EXPERIENCE

Carnegie Mellon University (Graduate Research Assistant), Pittsburgh, PA, August 2021 – present.

- Advisor: Phillip B. Gibbons.
- Research Topics: Processing-In-Memory; Database Index; Parallel Graph Processing; Parallel Algorithms and Data Structures; Computation Geometry; Vector Databases; Computer Architecture.

University of Maryland (Research Collaborator), College Park, MD, October 2022 – present.

- Advisor: Laxman Dhulipala.
- Research Topic: Time-evolving Graph Processing.

Meta Reality Lab (Research Scientist Intern), Redmond, WA, May 2023 – November 2023.

- Host: Ziyun Li.
- Research Topic: Architecture & System Design for Edge Devices; Compute-in-memory.

Massachusetts Institute of Technology (Research Assistant), Cambridge, MA, June 2020 – November 2020.

- Advisor: Julian Shun.
- Research Topic: Parallel Spatial Clustering Algorithms & Unsupervised Learning.

Tsinghua University (Undergraduate Research Assistant), Beijing, China, September 2020 – June 2021.

- Advisor: Yongpan Liu.
- Research Topic: Error Tolerant Designs for ReRAM based Compute-In-Memory Neural Network Accelerators.

Tsinghua University (Research Assistant), Beijing, China, January 2019 – Oct 2019.

- Advisor: Dan Pei.
- Research Topic: Fault Localization and Data Mining in Multi-dimensional Data.

Tsinghua University (SRT Research Assistant), Beijing, China, October 2018 – June 2019.

- Advisor: Yuantao Gu.
- Research Topics: Optimization, Statistical Learning, Graph Filtering, Sparse recovery, and NLP.

PUBLICATIONS

Under Submission

Yiwei Zhao, Win-San Khwa, Xiaoyu Sun, Sai Qian Zhang, Syed Shakib Sarwar, Kleber Hugo Stangherlin, Yi-Lun Lu, Jorge Tomas Gomez, Jae Sun Seo, Barbara De Salvo, Chiao Liu, Phillip B. Gibbons, Ziyun Li. 2024. [Paper title and conference name omitted to keep anonymity. Topic on efficient HW/SW co-design for edge AI featuring NPU and CIM.]

Yiwei Zhao, Hongbo Kang, Charles McGuffey, and Phillip B. Gibbons. 2024. [Paper title and conference name omitted to keep anonymity. Topic on efficient task-data orchestration on distributed-memory systems.]

Full Publications

[1] Hongbo Kang, **Yiwei Zhao**, Guy E. Blelloch, Laxman Dhulipala, Yan Gu, Charles McGuffey, and Phillip B. Gibbons. 2023. "**PIM-trie: A Skew-Resistant Trie for Processing-in-Memory**". In Proceedings of the 35th ACM Symposium on Parallelism in Algorithms and Architectures (**SPAA** '23). Association for Computing Machinery, New York, NY, USA, pp. 1–14. doi:10.1145/3558481.3591070.

[2] Zeyan Li, Junjie Chen, Yihao Chen, Chengyang Luo, **Yiwei Zhao**, Yongqian Sun, Kaixin Sui, Xiping Wang, Dapeng Liu, Xing Jin, Qi Wang, and Dan Pei. 2023. "**Generic and Robust Root Cause Localization for Multi-Dimensional Data in Online Service Systems**". In Journal of Systems and Software (**JSS**), Vol. 203, (2023), 111748. doi:10.1016/j.jss.2023.111748.

[3] Hongbo Kang, **Yiwei Zhao**, Guy E. Blelloch, Laxman Dhulipala, Yan Gu, Charles McGuffey, and Phillip B. Gibbons. 2022. "**PIM-tree: A Skew-resistant Index for Processing-in-Memory**". In Proceedings of the VLDB Endowment (**PVLDB**), 16(4): 946-958, December 2022. doi:10.14778/3574245.3574275. arXiv:2211.10516. ***Best Research Paper Runner-up in VLDB 2023***.

[4] Zeyan Li, Chengyang Luo, **Yiwei Zhao**, Yongqian Sun, Kaixin Sui, Xiping Wang, Dapeng Liu, Xing Jin, Qi Wang, and Dan Pei. 2019. "**Generic and Robust Localization of Multi-Dimensional Root Cause**". In the 30th International Symposium on Software Reliability Engineering (**ISSRE**). Oct. 28-31, 2019, Berlin. doi:10.1109/ISSRE.2019.00015.

Short Publications

[5] Hongbo Kang, **Yiwei Zhao**, Guy E. Blelloch, Laxman Dhulipala, Yan Gu, Charles McGuffey, and Phillip B. Gibbons. 2023. "**PIM-tree: A Skew-resistant Index for Processing-in-Memory (Abstract)**". In Proceedings of the 2023 ACM Workshop on Highlights of Parallel Computing (**HOPC** '23), June 16, 2023, Orlando, FL, USA. doi:10.1145/3597635.3598029.

TEACHING EXPERIENCES

- **18-742 Computer Architecture and Systems**: Teaching Assistant, Spring 2024, CMU.

SERVICES

- **Student Council for Faculty Hiring**: Chair, Jan 2024 – present, CMU.
- **Student Council for Faculty Hiring**: Member, Jan 2023 – Jan 2024, CMU.

SKILLS

- **Programming Languages**: C/C++, Java, Python, Shell Scripting, and Assembly.
- **Software Development Tools**: MATLAB, Git, SQL, and RStudio.
- **Hardware Design Tools**: Verilog HDL, Gem5, McPAT, Multisim, and ADS.
- **Machine Learning Frameworks**: TensorFlow, and PyTorch.
- **Other Software Tools**: Mathematica, Latex, AutoCAD, and Stata.