

Huanchen Zhang

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Education

Carnegie Mellon University Sept. 2013 - Feb. 2020
Ph.D. in Computer Science Department
Pittsburgh, PA USA
Thesis: "Memory-Efficient Search Trees for Database Management Systems"
Advisor: David G. Andersen

University of Wisconsin - Madison June 2009 - May 2013
B.S. in Computer Engineering, with *Distinctive Scholastic Achievement*
Madison, WI USA
2nd and 3rd Major: Computer Sciences and Mathematics
Advisor: Remzi Arpaci-Dusseau

Professional Experience

Assistant Professor Jan. 2021 - Present
Tsinghua University, Institute for Interdisciplinary Information Sciences (IIIS)
Beijing, China

Postdoctoral Research Fellow April. 2020 - Dec. 2020
Snowflake Inc.
San Mateo, CA USA

Graduate Research Assistant Sept. 2013 - Feb. 2020
Carnegie Mellon University
Pittsburgh, PA USA

Research Intern May 2016 - August 2016
Hewlett Packard Labs
Palo Alto, CA USA

Web Developer Aug. 2011 - May 2013
University of Wisconsin - Madison, College of Engineering
Madison, WI USA

Awards & Honors

- 2021 SIGMOD Jim Gray Dissertation Award
- 2021 World Artificial Intelligence Conference (WAIC) Yunfan Award
- 2020 Communications of the ACM (CACM) Research Highlights
- 2019 ACM SIGMOD Research Highlight Award
- Best Paper Award, ACM SIGMOD 2018
- Student Travel Grant, ACM SOSP 2015, USENIX NSDI 2014
- UW-Madison Graduate with Distinctive Scholastic Achievement, 2013
- Edgar H. and Laverne R. Krainer Memorial Scholarship, 2011 & 2012
- UW-Madison Computer Sciences Summer Research Assistant Award, 2012
- The John and Elizabeth Moore Award for Excellence in General Chemistry, 2011

Publications

- [1] **Huanchen Zhang**, Hyeontaek Lim, Viktor Leis, David G. Andersen, Michael Kaminsky, Kimberly Keeton, and Andrew Pavlo. “Succinct Range Filters” *Communications of the ACM (CACM)*. 4 (2021): 166-173
- [2] Ling Zhang, Matthew Butrovich, Tianyu Li, Yash Nannapaneni, Andrew Pavlo, John Rollinson, **Huanchen Zhang**. “Everything is a Transaction: Unifying Logical Concurrency Control and Physical Data Structure Maintenance in Database Management Systems” *Conference on Innovative Data Systems Research (CIDR’21)*. Jan. 2021.
- [3] **Huanchen Zhang**, Lily Liu, David G. Andersen, Michael Kaminsky, Kimberly Keeton, and Andrew Pavlo. “Order-Preserving Key Compression for In-Memory Search Trees” In: *Proceedings of the 2020 ACM International Conference on Management of Data (SIGMOD’20)*. June 2020, pp. 1601-1615.
- [4] **Huanchen Zhang**, Hyeontaek Lim, Viktor Leis, David G. Andersen, Michael Kaminsky, Kimberly Keeton, and Andrew Pavlo. “Succinct Range Filters” *ACM Transactions on Database Systems (TODS)*. 45.2 (2020): 1-31
- [5] **Huanchen Zhang**, Hyeontaek Lim, Viktor Leis, David G. Andersen, Michael Kaminsky, Kimberly Keeton, and Andrew Pavlo. “Succinct Range Filters” *ACM SIGMOD Record*, 48.1 (2019): 78-85.
- [6] **Huanchen Zhang**, Hyeontaek Lim, Viktor Leis, David G. Andersen, Michael Kaminsky, Kimberly Keeton, and Andrew Pavlo. “SuRF: Practical Range Query Filtering with Fast Succinct Tries” In: *Proceedings of the 2018 ACM International Conference on Management of Data (SIGMOD’18)*. June 2018, pp. 323-336.
Best Paper Award (1 out of 90 accepted papers)
- [7] Ziqi Wang, Andrew Pavlo, Hyeontaek Lim, Viktor Leis, **Huanchen Zhang**, Michael Kaminsky, and David G. Andersen. “Building a Bw-Tree Takes More Than Just Buzz Words”. In: *Proceedings of the 2018 ACM International Conference on Management of Data (SIGMOD’18)*. June 2018, pp. 473-488.
- [8] **Huanchen Zhang**, David G. Andersen, Andrew Pavlo, Michael Kaminsky, Lin Ma, and Rui Shen. “Reducing the Storage Overhead of Main-Memory OLTP Databases with Hybrid Indexes”. In: *Proceedings of the 2016 International Conference on Management of Data (SIGMOD’16)*. June 2016, pp. 1567-1581.

Non Peer-Reviewed

- [9] **Huanchen Zhang**. “The End of the x86 Dominance in Databases?” Abstract. In: *Conference on Innovative Data Systems Research (CIDR’19)*. Jan. 2019.

Patents

- [10] **Huanchen Zhang** and Kimberly Keeton. “Data Storage over Immutable and Mutable Data Stages”. Filed Sept. 2017, Granted Sept. 2019.
- [11] **Huanchen Zhang** and Kimberly Keeton. “Changing Concurrency Control Modes”. Filed May 2017. Patent Pending.

Service

- Program Committee – SIGMOD 2022
- Program Committee – ICDE 2022
- Program Committee – AIDB 2021
- Program Committee – SIGMOD 2021
- Program Committee – SIGMOD 2020
- External Reviewer – KAIS’18, DISC’21, TKDE’21

Teaching

- Instructor – Database Systems (Tsinghua 40470414) – Fall 2021
- Instructor – Data Structures in the Real World (Tsinghua 20470102) – Summer 2021
- Head TA & Guest Lecturer – Advanced OS and Distributed Systems (CMU 15-712) – Fall 2017
- Head TA – Database Applications (CMU 15-415/615) – Fall 2016

Mentoring

Students

- Hengrui Wang (Tsinghua Ph.D. 2021 incoming)
- Yihao Liu (Tsinghua M.S. 2021 incoming)
- Yipeng Liu (Tsinghua Ph.D. 2022 incoming)
- Yulong Hui (Tsinghua Ph.D. 2022 incoming)

Project Advisor

- Lily (Xiaoxuan) Liu (CMU M.S. 2018)
- Mengxi Chen (CMU M.S. 2017)
- Runshen Zhu (CMU M.S. 2016)
- Jiexi Lin (CMU M.S. 2016)
- Jianhong Li (CMU M.S. 2016)
- Rui Shen (CMU M.S. 2016)
- Lin Ma (Peking University B.S. 2015)

Talks

- “Cloud Data Warehouses: Snowflake and Beyond.”
 - ByteDance, April 2021
 - Alibaba Cloud, April 2021
 - CCF Forum, January 2021
- “Order-Preserving Key Compression for In-Memory Search Trees.”
 - SIGMOD’20 Conference Talk, June 2020
 - U Chicago Database Group Seminar, June 2020
 - Snowflake Inc, May 2020
- “Memory-Efficient Search Trees for Database Management Systems.”
 - SIGMOD’21 Jim Gray Award Talk, June 2021
 - Snowflake Inc, January 2020
 - Salesforce, January 2020
 - Tsinghua University IIS, October 2019
 - Thesis Defense, October 2019
- “SuRF: Practical Range Query Filtering with Fast Succinct Tries.”
 - CMU Network Group Seminar, November 2018
 - Parallel Data Lab Annual Retreat, October 2018
 - SIGMOD’18 Conference Talk, June 2018
 - CMU Parallel Data Lab Seminar, May 2018
 - CMU Database Group Seminar, May 2018
- “Towards Space-Efficient High-Performance In-Memory Search Structures”
 - Thesis Proposal, April 2018
- “Succinct Trie Indexes Made Practical.”
 - CMU Database Group Seminar, February 2017
- “Distributed Metadata Store for RePO”
 - HP Labs, August 2016
- “Reducing the Storage Overhead of Main-Memory OLTP Databases with Hybrid Indexes.”
 - Parallel Data Lab Annual Retreat, October 2016
 - SIGMOD’16 Conference Talk, June 2016
 - UC-Berkeley Database Group Seminar, June 2016
 - HP Labs, May 2016

References

David G. Andersen

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Andrew Pavlo

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Michael Kaminsky

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Kimberly Keeton

Distinguished Technologist
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