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Research Interests

E-graphs and Equality Saturation. Query Optimization. Program Optimization and Synthesis. Datalog.

Education Background

Ph.D., University of Washington

Sept 2022-

- Ph.D. in Computer Science.
- Co-advised by Zachary Tatlock and Dan Suciu.

Master, University of Washington

Sept 2021-June 2022

- M.S. in Computer Science.
- Thesis: *Towards a Relational E-graph*, advised by Zachary Tatlock.

Bachelor, University of Washington

Sept 2018-June 2021

- B.S. with Departmental Honors in Computer Science, *Magna Cum Laude*. GPA 3.90/4.00.
- Thesis: *Faster and Worst-Case Optimal E-Matching*, advised by Zachary Tatlock.

Conference papers

- Remy Wang, Dan Suciu, **Yihong Zhang**. *Semantic Foundations of Equality Saturation*. In submission.
- Xiang Li, Xiangyu Zhou, Rui Dong, **Yihong Zhang**, Xinyu Wang. *Efficient Bottom-Up Synthesis for Programs with Local Variables*. Principles of Programming Languages (POPL) 2024. **Selected for MIT PL Review 2024**.
- **Yihong Zhang**, Remy Wang, Oliver Flatt, David Cao, Philip Zucker, Eli Rosenthal, Zachary Tatlock, Max Willsey. *Better Together: Unifying Datalog and Equality Saturation*. Programming Language Design and Implementation (PLDI) 2023. **Selected for MIT PL Review 2024**.
- **Yihong Zhang**, Remy Wang, Max Willsey, Zachary Tatlock. *Relational E-matching*. Principles of Programming Languages (POPL) 2022.
- Maximilian Schleich, Zixuan Geng, **Yihong Zhang**, and Dan Suciu. *GeCo: Quality Counterfactual Explanations in Real Time*. PVLDB, 14(9): 1681-1693, 2021. doi:10.14778/3461535.3461555.

Workshop papers

- **Yihong Zhang**, Oliver Flatt. *Ensuring the Termination of Equality Saturation for Terminating Term Rewriting Systems (Contributed Talk)*. E-Graph Research, Applications, Practices, and Human-factors Symposium (EGRAPHS) 2023.
- Oliver Flatt, **Yihong Zhang**. *egglog In Practice: Automatically Improving Floating-point Error (Contributed Talk)*. E-Graph Research, Applications, Practices, and Human-factors Symposium (EGRAPHS) 2023.
- **Yihong Zhang**. *Chasing an Egg (Contributed Talk)*. E-Graph Research, Applications, Practices, and Human-factors Symposium (EGRAPHS) 2022.
- **Yihong Zhang**. *Faster and Worst-Case Optimal E-matching via Reduction to Conjunctive Queries*. Programming Language Design and Implementation (PLDI) 2021 Student Research Competition. **Awarded first place at PLDI SRC and second place in the SRC Grand Finals**.

Employment

Research Intern , Adobe, hosted by Maaz Ahmad	June 2024–Sept 2024
Research Intern , RelationalAI, hosted by Martin Bravenboer	April 2022–June 2022
Research Intern , HKUST, hosted by Lionel Parreaux	June 2021–Sept 2021
Software Engineer Intern , Oracle	June 2020–Sept 2020

Recognition

Second Place , ACM Student Research Competition Grand Finals	June 2022
First Place , PLDI Student Research Competition	June 2021
First Place , International Collegiate Programming Contest (ICPC), UW Qualifier	Oct 2019
Fifth Place , International Collegiate Programming Contest (ICPC), Pacific Northwest Region	Nov. 2018
Dean's List , University of Washington	Dec 2018–June 2021

Teaching

Teaching Assistant , CSE 505: Principles of Programming Languages (Graduate)	Spring 2021
Teaching Assistant , CSE 374: Intermediate Programming Concepts and Tools	Winter 2021
Teaching Assistant , CSE 341: Programming Languages	Autumn 2020

Mentorship

Kirsten Graham	Sept. 2023–
Alex Fischman	Sept. 2023–
Ryan Tjoa	Jan. 2023–
Zhiyuan Yan	Jan. 2023–

Services

Ph.D. Application Reader , University of Washington	2023, 2024
Subreviewer , POPL 2024	2024