Website: https://effect.systems   **GitHub:** @yihozhang
E-mail: yz489@cs.washington.edu   **Twitter:** @yihongz_bot

Research Interests

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

Education Background

Ph.D., University of Washington   Sept 2022-Current

· 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

· Dan Suciu, Remy Wang, **Yihong Zhang**. *Semantic Foundations of Equality Saturation*. International Conference on Databaes Theory (ICDT) 2025.

· 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*. Proceedings of the VLDB Endowment (PVLDB).

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 Assistant, University of Washington, advised by Z. Tatlock and D. Suciu   Sept 2021–Current
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–June 2024
Zhiyuan Yan   Jan 2023–June 2024

Services

Ph.D. Application Reader, University of Washington   2023, 2024
Mentor, Pre-Application Mentoring Service (PAMS), University of Washington   Nov 2024
Subreviewer, POPL 2024, FOCS 2024   2024