# Xiangyu Zhou

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## EDUCATION

University of Michigan, Ann Arbor, MI — Ph.D. Candidate in Computer Science, Planned Graduation: May 2028
Advisor: Dr. Steve Oney

University of Washington, Seattle, WA — B.S. in Computer Engineering, 2018–2022

## PUBLICATIONS

(* denotes equal contribution)

- Efficient Bottom-Up Synthesis for Programs with Local Variables
  Xiang Li*, Xiangyu Zhou*, Rui Dong, Yihong Zhang, Xinyu Wang
  POPL 2024 (ACM SIGPLAN Symposium on Principles of Programming Languages)
- Synthesizing Analytical SQL Queries from Computation Demonstration
  Xiangyu Zhou, Rastislav Bodik, Alvin Cheung, Chenglong Wang
  Distinguished Paper Award
  PLDI 2022 (ACM SIGPLAN Conference on Programming Language Design and Implementation)

## RESEARCH EXPERIENCE

Simulation for Human–Computer Interaction — Ph.D. Research, University of Michigan (2025–ongoing)

- Designed and tested models grounded in human motor control and decision-making theories.
- Explored and implemented user simulators using spiking neural networks (SNNs) and reinforcement learning (RL) to predict human-like interaction behavior.
- Conducted hypothesis-driven experiments and simulator benchmarking on speed–accuracy trade-offs in interface tasks.
- Built a React + Firebase web experiment platform to collect fine-grained interaction trajectories in constrained tasks.

Neuro-Symbolic Program Synthesis for Web Automation — Ph.D. Research, University of Michigan (2023–ongoing)

- Developed a neuro-symbolic framework that generates interpretable web automation programs by combining LLM reasoning with symbolic execution.

- Engineered prompting strategies to map natural language instructions into a Domain-Specific Language (DSL) for DOM reasoning and precise element selection.
- Applied programming-by-demonstration to enable reliable, efficient, and user-aligned human–AI interaction.

Efficient Bottom-Up Synthesis for Programs with Local Variables — University of Michigan (2022–2023)

- Designed and implemented a state-of-the-art program synthesis algorithm supporting free local variables.
- Evaluated performance on a large-scale web automation benchmark (131 real-world tasks), demonstrating efficiency and scalability.

Synthesizing Analytical SQL Queries from Demonstration — University of Washington (2020–2021)

- Developed a novel program synthesis algorithm for automatically generating analytical SQL queries from computation demonstrations.
- Evaluated the tool on 80 real-world query tasks and validated usability through quantitative and qualitative user studies.

## AWARDS & GRANTS

- OpenAI Researcher Access Program Grant, 2024
- Rackham Conference Travel Grant, 2023
- SIGPLAN Professional Activities Committee Award, 2023
- SIGPLAN Professional Activities Committee Award, 2022
- Distinguished Paper Award at PLDI, 2022

## SERVICES

- Artifact Evaluation Committee Member — PLDI 2025, OOPSLA 2025, POPL 2024
- Student Volunteer — PLDI 2023

## TEACHING

University of Michigan – Graduate Student Instructor

- EECS 183: Elementary Programming Concepts (Fall 2025)
- EECS 203: Discrete Mathematics (Spring 2025)
- EECS 481: Software Engineering (Fall 2023, Winter 2024)

University of Washington – Undergraduate Teaching Assistant

- CSE 461: Introduction to Computer Networks (Winter 2022)

## TECHNICAL

Programming & Tools: Python, Java, Rust, C++, OCaml

Machine Learning & Simulation: PyTorch, Nengo, MuJoCo

Web & Experiment Platforms: React, Vite, Firebase

Data Analysis & Visualization: R (ggplot2), Pandas, SQL