

Kasra Ferdowsi

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Education

- UC San Diego** 2019 - 2024
- PhD in Computer Science and Engineering
 - Depth Area: Programming Languages, Compilers, and Software Engineering
 - Expected Graduation Date: June 2024
- UC Berkeley** 2017 - 2019
- B.S. in Electrical Engineering and Computer Science
 - Graduated with Highest Honors
- Diablo Valley College** 2014 - 2017
- A.S. for Transfer in Mathematics
 - A.S. for Transfer in Physics

Publications

- ColDeco: An End User Spreadsheet Inspection Tool for AI-Generated Code** VL/HCC 2023
Ferdowsi, K., Williams, J., Drosos, I., Gordon, A.D., Negreanu, C., Polikarpova, N., Sarkar, A., and Zorn, B.
- Investigating the Impact of Using a Live Programming Environment in a CS1 Course** SIGCSE TS 2022
Huang, R., Ferdowsi, K., Selvaraj, A., Soosai Raj, A.G., and Lerner, S.
- LooPy: Interactive Program Synthesis with Control Structures** OOPSLA 2021
Ferdowsifard, K., Barke, S., Peleg, H., Lerner, S., and Polikarpova, N.
- Small-Step Live Programming by Example** UIST 2020
Ferdowsifard, K., Ordookhanians, A., Peleg, H., Lerner, S., and Polikarpova, N.

Research Experience

- LEAP: Live Exploration of AI-Generated Programs** 2023
- With Ruanqianqian (Lisa) Huang, Michael B. James, Sorin Lerner, and Nadia Polikarpova.
 - Designed and implemented a novel interaction model for AI programming assistants that support exploring multiple code suggestions through Live Programming.
 - Ran a 17 participant between-subjects user study showing numerous benefits to this interaction model, including preventing over-reliance, and reducing cognitive load.
 - Link to ArXiv submission: <https://arxiv.org/abs/2306.09541>
- Bottom-up Synthesis of Side-Effects with Separation Logic** 2023
- Reformulated bottom-up enumerative synthesis as proof search in Concrete Heap Separation Logic, allowing for efficient and provably correct synthesis in the presence of mutating components.
 - Implemented and evaluated the technique, showing that it is comparable to the state-of-the-art while offering determinism and a correctness guarantee.
 - Under submission.
- Research Internship Project at Microsoft Research** 2023
- Ongoing research.

Research Experience (cont.)

- Towards Human-Centered Types and Type Debugging** 2022
- PLATEAU'23 Workshop paper and presentation.
 - Surveyed the history of the usability of type systems, and type error messages. And offered concrete future directions based on cutting-edge HCI research.
 - Link to publication: <https://doi.org/10.1184/R1/22227457.v1>
- ColDeco: An End-User Spreadsheet Inspection Tool for AI-Generated Code** 2022
- With Jack Williams, Ian Drosos, Andrew Gordon, Carina Negreanu, Advait Sarkar, and Ben Zorn.
 - Designed and implemented a novel interaction model for inspecting and diagnosing errors in AI-generated code, targeted at end-users.
 - Conducted a 24-participant controlled experiment to evaluate the interaction.
 - Link to the paper: <https://ieeexplore.ieee.org/document/10305647>
- The Usability of Advanced Type Systems** 2022
- PhD Research Exam.
 - Surveyed publications on advanced type systems which inspired the Rust programming language, as well as all usability studies on Rust itself.
 - Link to the written report: <https://arxiv.org/abs/2301.02308>
- LoopPy: Interactive Program Synthesis with Control Structures** 2020 - 2021
- With Shraddha Barke, Hila Peleg, Sorin Lerner, and Nadia Polikarpova.
 - Designed and implemented a novel technique for using Bottom-up Enumerative Synthesis for efficient synthesis of blocks of Python code.
 - Links to the online editor, the paper, and conference talk: <http://loopy.goto.ucsd.edu/>
- Impact of Live Programming in a CS1 Course** 2020 - 2021
- With Ruanqianqian Huang, Ana Selvaraj, Adalbert Gerald Soosai Raj and Sorin Lerner.
 - Implemented a web editor for the Live Programming environment *Projection Boxes*, and developed and deployed a server for collecting usage data from the editor.
 - Ran a user study of hundreds of students in a CS1 course, and visualized and performed statistical analysis on data collected from the study.
 - Link to the paper: <https://dl.acm.org/doi/10.1145/3478431.3499305>
- SnipPy: Small-Step Live Programming by Example** 2020
- With Allen Ordookhanians, Hila Peleg, Sorin Lerner, and Nadia Polikarpova.
 - Designed and implemented a novel Program Synthesis interaction model with *Projection Boxes*.
 - Ran a 12-participant user study for evaluating the interaction.
 - Links to the online editor, the paper, and conference talk: <https://snippy.goto.ucsd.edu/>

Engineering Experience

- Engineering Intern *Tom Sawyer Software*** Summer 2021
- Designed and developed the ability to deploy *Tom Sawyer Perspectives* applications to Kubernetes.
 - Lead the effort to document and improve *Tom Sawyer Perspectives'* deployment user experience.
- Engineering Intern *Tom Sawyer Software*** Summer 2020
- Co-designed and developed a tool using Git, Maven and Docker to streamline building and deploying *Tom Sawyer Perspectives* applications.
 - Main contributions included user-interface additions and improvements, an overhaul of the version control system, and bug fixes and improvements.
- Engineering Intern *Tom Sawyer Software*** 2016 - 2019
- Helped design and develop the *Tom Sawyer Licensing Server 2.0*, a backwards-compatible scalable web server using a microservice architecture.
 - Implemented secure and user-friendly account management features, and a responsive web interface for *Graph Database Browser*, as well as database organization, query improvements, and other fixes.

Teaching Experience

- Teaching Assistant** *CSE130: Programming Languages* Fall 2023
- Presented discussion sections, held office hours, graded assignments, and assisted students on Piazza.
- Teaching Assistant** *CSE230: Graduate Programming Languages* Fall 2022
- Presented discussion sections, held office hours, graded assignments, and assisted students on Piazza.
- Teaching Assistant** *CSE130: Programming Languages* Winter 2022
- Presented discussion sections, held office hours, and assisted students on Piazza.
- Teaching Assistant** *CSE130: Programming Languages* Fall 2021
- Presented discussion sections, held weekly office hours, and assisted students on Piazza.
- Teaching Assistant** *CSE11: Accelerated Intro to Programming* Spring 2020
- Took responsibility for one week of the course in the instructor's absence, leading 2 lectures (in a live Q&A format with pre-recorded videos), and giving an online midterm exam to over 200 students.
 - Led the weekly discussion sections, including writing review notes and practice problems tailored to the course, leading live discussions, and creating pre-recorded videos.
- Teaching Assistant** *CSE131: Compiler Construction* Fall 2019
- Created autograder tests and infrastructure for the class projects.
 - Assisted in the design of course assignments.
 - Updated the compilation target from Intel x86 to x86_64.

Service

- Student Organizer** PLATEAU 2024
- External Reviewer** CHI 2023
- Program Committee Member** HATRA 2023
- Student Volunteer** PLDI 2023

Mentorship

- GradWIC Mentor** 2022 - 2023
- CSE599: Teaching Methods in Computer Science Mentor** Winter 2023
- ERSP Mentor** 2021 - 2022
- With Ruanqianqian (Lisa) Huang, Nadia Polikarpova and Sorin Lerner
 - Link to poster: https://drive.google.com/file/d/1HZx_FODLaYjbIDEKttTFO5jsF8EUov_Y/