

Kasra Ferdowsi

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Research Interests

My research is at the intersection of *Human-Computer Interactions* and *Programming Languages*. Specifically, I hope to bridge the gap between cutting-edge academic research in programming languages and everyday programming by designing and building tools and interaction models that are useful to, and usable by, people who write code.

Education

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| UC San Diego | Sep 2019 - Current |
| <ul style="list-style-type: none">- PhD in Computer Science and Engineering- Depth Area: Programming Languages, Compilers, and Software Engineering- Expected Graduation Date: June 2024 | |
| UC Berkeley | Jun 2017 - May 2019 |
| <ul style="list-style-type: none">- B.S. in Electrical Engineering and Computer Science- Graduated with Highest Honors | |
| Diablo Valley College | Aug 2014 - May 2017 |
| <ul style="list-style-type: none">- A.S. for Transfer in Mathematics- A.S. for Transfer in Physics | |

Publications

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| 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

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| Research Internship Project at Microsoft Research | 2022 |
| <ul style="list-style-type: none">- With Jack Williams, Ian Drosos, Andrew Gordon, Carina Negreanu, Advait Sarkar, and Ben Zorn.- Designed and implemented a novel interaction model.- Conducted a 24-participant controlled experiment to evaluate the interaction. | |
| The Usability of Advanced Type Systems | 2022 |
| <ul style="list-style-type: none">- 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://weirdmachine.me/papers/usability_of_advanced_type_systems.pdf | |
| LooPy: Interactive Program Synthesis with Control Structures | 2020 - 2021 |
| <ul style="list-style-type: none">- 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.

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/>

Teaching Experience

Teaching Assistant *CSE230: Programming Languages* Fall 2022

- Held weekly office hours, graded assignments, and assisted students on Piazza.

Teaching Assistant *CSE130: Programming Languages* Winter 2022

- Presented discussion sections, held weekly office hours, and assisted students with technical and conceptual problems on Piazza.

Teaching Assistant *CSE130: Programming Languages* Fall 2021

- Presented discussion sections, held weekly office hours, and assisted students with technical and conceptual concepts 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.
- Updated existing projects from Intel x86 to x86_64
- Co-led the midterm review discussion section.

Mentorship

ERSP Mentor 2021 - 2022

- With Ruanqianqian (Lisa) Huang, Nadia Polikarpova and Sorin Lerner
- Link to poster: https://drive.google.com/file/d/1HZx_FODLaYjbIDEKttFO5jsF8EUov_Y/

GradWIC Mentor 2022

Engineering Experience

Engineering Intern *Tom Sawyer Software* Jun 2021 - Sep 2021

- Designed and developed the *Deploy to Kubernetes* feature of *Tom Sawyer Innovator*.
- Lead the effort to document and improve *Innovator's* user and development experience.

Engineering Intern *Tom Sawyer Software* Apr 2020 - Jun 2020

- Co-designed and developed the *Tom Sawyer Application Innovator* (work in progress), a web application using and managing Git, Maven and Docker to streamline the build and deployment of 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*

May 2016 - May 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 *Tom Sawyer Graph Database Browser*, as well as database organization and query improvements, and other fixes.