

Ruanqianqian (Lisa) Huang

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| CONTACT INFORMATION | Department of Computer Science and Engineering University of California San Diego 9500 Gilman Drive, Mail Code 0404 La Jolla, CA 92093-0404, USA | Email: r6huang@ucsd.edu Website: rlisahuang.com |
| RESEARCH INTERESTS | AI-assisted programming, software engineering, end-user programming, computing education | |
| EDUCATION | University of California, San Diego , La Jolla, CA, USA | |
| | Ph.D. in Computer Science | Aug. 2020 - Jun. 2026 (exp.) |
| | <ul style="list-style-type: none">• Thesis: <i>Human-Centered Programming Systems (tentative)</i>• Committee: Sorin Lerner (Chair), Michael Coblenz, Philip J. Guo, and James D. Hollan | |
| | M.S. in Computer Science | Aug. 2020 - Dec. 2022 |
| | Wellesley College , Wellesley, MA, USA | Aug. 2016 - May 2020 |
| | B.A. (summa cum laude) in Computer Science (Honors) and Cognitive & Linguistic Sciences | |
| | <ul style="list-style-type: none">• Thesis: <i>The Design and Implementation of Venbrace, A Text Language for App Inventor</i>• Advisor: Professor Franklyn Turbak | |
| TEACHING EXPERIENCE | 10 academic terms of teaching undergrad and grad students at UCSD and Wellesley in courses spanning various domains of computing. Received CSE Award for Excellence in Teaching (2024). | |
| | University of California, San Diego | |
| | • Instructor of Record , DSC 207R - Python for Data Science (50 students) | Fall 2025 |
| | • Instructor of Record , CSE 12 - Data Structures & OOP (45 students) | Summer 2024 |
| | • Instructor of Record , CSE 193 - Intro to CS Research (53 students) | Fall 2023 |
| | • Teaching Assistant , CSE 8A - Intro to Programming in Python (495 students) | Fall 2024 |
| | • Teaching Assistant , CSE 291 - LLMs, Programming, and HCI (34 students) | Spring 2024 |
| | • Teaching Assistant , CSE 8A - Intro to Programming in Python (601 students) | Fall 2022 |
| | • Teaching Assistant , CSE 230 - Graduate Programming Languages (200 students) | Fall 2021 |
| | • Mentor TA , CSE 599 - Teaching Methods in Computer Science (45 students) | Spring 2025 |
| | Wellesley College | |
| | • Tutor , CS 251 - Principles of Programming Languages | Fall 2019 |
| | • Tutor , CS 230 - Data Structures | Spring & Fall 2018 |
| | Girls Who Code | |
| | • Club Facilitator and Teaching Assistant, Intro to Web Programming | Fall 2017 |
| PUBLICATIONS & PREPRINTS | Conference Papers | |
| | [C.5] Ilana Shapiro, Ruanqianqian (Lisa) Huang , Zachary Novack, Cheng-i Wang, Hao-Wen Dong, Taylor Berg-Kirkpatrick, Shlomo Dubnov, and Sorin Lerner. Deriving Representative Structure from Music Corpora. arXiv preprint arXiv:2502.15849. In <i>the 34th International Joint Conferences on Artificial Intelligence (IJCAI '25)</i> , Montreal, Canada, 2025. | |
| | [C.4] Ruanqianqian (Lisa) Huang , Savitha Ravi, Michael He, Boyu Tian, Sorin Lerner, and Michael Coblenz. How Scientists Use Jupyter Notebooks: Goals, Quality Attributes, and Opportunities. In <i>Proceedings of the IEEE/ACM 47th International Conference on Software Engineering (ICSE '25)</i> , Ottawa, Canada, 2025. | |

- [C.3] **Ruanqianqian (Lisa) Huang**, Philip J. Guo, and Sorin Lerner. Unfold: Enabling Live Programming for Debugging GUI Applications. In *2024 IEEE Symposium on Visual Languages and Human-Centric Computing (VL/HCC)*, Liverpool, UK, 2024.
- [C.2] **Ruanqianqian (Lisa) Huang**[†], Kasra Ferdowsi[†], Michael B. James, Nadia Polikarpova, and Sorin Lerner. 2024. Validating AI-Generated Code with Live Programming. In *Proceedings of the CHI Conference on Human Factors in Computing Systems (CHI '24)*, May 11–16, 2024, Honolulu, HI, USA. ACM, New York, NY, USA, 8 pages. ([†]Equal contribution)
- [C.1] **Ruanqianqian (Lisa) Huang**, Kasra Ferdowsi, Ana Selvaraj, Adalbert Gerald Soosai Raj, and Sorin Lerner. Investigating the Impact of Using a Live Programming Environment in a CS1 Course. In *Proceedings of the 53rd ACM Technical Symposium on Computer Science Education V. 1 (SIGCSE '22)*. Providence, RI, March 2022.

Workshop and Poster Papers

- [S.3] **Ruanqianqian (Lisa) Huang**, Philip J. Guo, and Sorin Lerner. Unfolding State Changes via Live State-First Debugging. In *the Ninth Workshop on Live Programming (LIVE 2023)*. Cascais, Portugal, October 2023.
- [S.2] **Ruanqianqian (Lisa) Huang**, Elizaveta Pertseva, Michael Coblenz, and Sorin Lerner. How do Haskell programmers debug?. In *the 13th annual workshop on the intersection of HCI and PL (PLATEAU '23)*. Pittsburgh, PA, February 2023.
- [S.1] **Ruanqianqian Huang** and Franklyn Turbak. A Design for Bidirectional Conversion between Blocks and Text for App Inventor. In *2019 IEEE Blocks and Beyond Workshop (B&B)*, Memphis, TN, October 2019.

Technical Reports

- [R.1] **Ruanqianqian (Lisa) Huang**, Ayana Monroe, Peli de Halleux, Sorin Lerner, and Nikolaj Bjørner. Z3Guide: A Scalable, Student-Centered, and Extensible Educational Environment for Logic Modeling. Microsoft Research Technical Report MSR-TR-2025-36. 2025.

Preprints

- [P.3] **Ruanqianqian (Lisa) Huang**, Avery Reyna, Haijun Xia, Sorin Lerner, and Brian Hempel. Agentic Coding in Professional Software Development. Under review (title anonymized). 2025.
- [P.2] **Ruanqianqian (Lisa) Huang**, Brian Hempel, Yining Cao, Haijun Xia, and Sorin Lerner. Always-Presentable Computational Notebooks. Under review (title anonymized). 2025.
- [P.1] Brian Hempel, **Ruanqianqian (Lisa) Huang**, Devamardeep Hayatpur, Sorin Lerner, and Haijun Xia. Multi-Modal Plot Authoring. Under review (title anonymized). 2025.

RESEARCH EXPERIENCE

University of California San Diego

La Jolla, CA

Graduate Student Researcher (*Supervisor: Prof. Sorin Lerner*)

Aug. 2020 - Present

- Investigating the use of agentic AI in software development. [P.3]
- Led the user evaluation of multi-modal plotting support in computational notebooks. [P.1]
- Identified scientists' notebook challenges via field observations to inform a new tool. [C.4, P.2]
- Translated contextual inquiry insights into a human-centered [GUI debugging tool](#). [C.3]
- Designed and evaluated a [tool](#) to help developers validate AI-generated code. [C.2]
- Revealed a [coding tool](#)'s benefits for learning through a mixed-methods field study. [C.1]

Project Lead & UX Researcher, LLM-Powered Assistants for Education

Aug. 2023 - Present

- Leading a cross-functional team, translating research into education-serving products. [[coverage](#)]
- Developing ML-based pipelines for a large-scale behavioral data analysis.
- Developed the initial AI tutor prototype, identifying key improvements through pilot testing.
- Directed a large-scale deployment, analyzing surveys and usage logs to inform product roadmap.

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| | Apple Inc. HCI Research Intern, AI/ML (<i>Supervisor: Dr. Mary Beth Kery</i>) <ul style="list-style-type: none"> • Led needfinding interviews and field observations on the workflows of machine learning novices. • Developed interactive prototypes to simplify model building for non-expert users. | Pittsburgh, PA Apr. 2023 - Sep. 2023 |
| | Microsoft Research Research Intern, RiSE (<i>Supervisor: Dr. Nikolaj Bjørner</i>) <ul style="list-style-type: none"> • Created design guidelines for logic modeling tools via participatory design with educators. • Developed Z3Guide, a 100% client-side learning environment for the Z3 theorem prover. [R.1] • Validated Z3Guide’s benefits for learning experience through an online workshop (N=112). | Redmond, WA Jun. 2022 - Sep. 2022 |
| MENTORSHIP EXPERIENCE | As a graduate student at UCSD, I directly supervised 10 undergraduate and graduate research assistants as follows: <ul style="list-style-type: none"> • Arpita Pandey (UCSD undergrad), on Information Foraging in Jupyter Notebooks 2025 - • Avery Reyna (transitioning to PhD programs), on Agentic Coding in Software Development [P.3] 2025 - • Kaleigh Beachler (UCSD undergrad), on AI Tutor for Programming Education; winner of UCSD Triton Research & Experiential Learning Scholars (TRELS) for summer 2024 (20% acceptance rate) 2024 - • Michael He (UCSD undergrad), on Jupyter Notebook Use in Scientific Computing [C.4] 2024 • Boyu Tian (UCSD undergrad), on Jupyter Notebook Use in Scientific Computing [C.4] 2024 • Justin Yao Du (UCSD undergrad via Early Scholars Research Program (ERSP); now Databricks), on Live Programming for Unit Testing; selected for presentation in 2022 PLDI Student Research Competition 2021 - 2022 • Mandeep Syal (UCSD undergrad via ERSP; now Lumenci), on Live Programming for Unit Testing; selected for presentation in 2022 PLDI Student Research Competition 2021 - 2022 • Thanh-Nha Tran (UCSD undergrad via ERSP; now MS student at UCSD), on Live Programming for Unit Testing; selected for presentation in 2022 PLDI Student Research Competition 2021 - 2022 • Ana Selvaraj (UCSD undergrad; then MS student at Stanford), on Live Programming in Education [C.1] 2020 -2021 • Ilana Shapiro (UCSD PhD student), on Symbolic Music Analysis [C.5] 2023 - 2025 <p>In Fall 2023, I further advised 53 undergraduate ERSP participants (15 research projects across various domains of Computing) as their instructor for “Intro to CS Research”.</p> | |
| HONORS, AWARDS, AND CERTIFICATES | Special Recognitions for Outstanding Reviews (x2), UIST 2025 2025 UCSD CSE Award for Excellence in Teaching (awarded to 1 PhD student) 2024 UCSD Certificate in Student-Centered College Teaching & Course Design 2024 2024 Summer Graduate Teaching Scholars, UC San Diego 2023 Special Recognitions for Outstanding Reviews, CHI 2024 2023 PLMW Scholarship, Symposium on Principles of Programming Languages (POPL) 2021 Trustee Scholar (1 of 4 out of 600+ graduates), Wellesley College 2020 Academic Achievement Award, Wellesley College (awarded to 1 graduating CS major) 2020 Sigma Xi Honors Research Society, Wellesley College 2020 | |

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| | Jerome A. Schiff Fellowship for Thesis Research, Wellesley College | 2019 |
| | Phi Beta Kappa Honor Society (elected as a junior), Wellesley College | 2019 |
| | Science Center Research Award, Wellesley College | 2018 |
| | Sandra Wieland Howe Scholarship for Music Performance, Wellesley College | 2017 |
| INVITED TALKS | [T.7] “How Scientists Use Jupyter Notebooks: Goals, Quality Attributes, and Opportunities”. <i>SoCal PLS</i> , Feb. 2025. | |
| | [T.6] Invited panelist at PLMW@SPLASH 2024 (Ph.D. student mentoring event), Oct 2024. | |
| | [T.5] “User-Enhanced Learning Experience of Symbolic Logic Solving”. <i>Women in Compilers and Tools Meetup Series, LLVM Organization</i> . | |
| | [T.4] “Impact of Live Programming on Student Learning in a CS1 Course”. <i>Computing Education Research Seminar, UC Davis</i> , Nov. 2022. | |
| | [T.3] “The Design and Implementation of Venbrace, A Text Language for App Inventor”. <i>App Inventor Team, Massachusetts Institute of Technology</i> , May 2020. | |
| | [T.2] “Bidirectional Conversion between Blocks and Text for App Inventor”. <i>Blocks and Beyond Workshop</i> , Oct. 2019; <i>MIT App Inventor Summit</i> , Aug. 2019. | |
| | [T.1] “Interactive Visualizations and Credibility Evaluations of News Stories on TwitterTrails”. <i>Wellesley College Summer Research Summit</i> , Aug. 2018. | |
| SERVICE | External Service | |
| | Program Committee: LIVE Workshop (2024, 2025), SIGCSE TS (2024, 2025) | |
| | Artifact Evaluation Committee: <Programming> (2024) | |
| | Reviewer: TOCE (2023), CHI (2022, 2024, 2025), UIST (2023, 2025) | |
| | Student Volunteer: POPL (2023) | |
| | Internal Service | |
| | Mentor, UCSD Graduate Women in Computing | 2024 - |
| | Co-President, UCSD Graduate Women in Computing | 2023 - 2024 |
| | Mentorship Program Coordinator, UCSD Graduate Women in Computing | 2022 - 2023 |
| | UCSD CSE Ph.D. Admissions Committee | 2021 - 2023 |
| | Application Reviewer, UCSD CSE Early Research Scholars Program | 2022 |
| | Executive Board, Wellesley College Chamber Music Society | 2017 - 2020 |
| | Volunteer, Harvard PBHA Chinatown Teen | 2016 - 2017 |
| OTHER EMPLOYMENT | Apple Inc. | Cupertino, CA |
| | Data Analysis Intern, Cloud Infrastructure | Summer 2019 |
| | <ul style="list-style-type: none"> • Forecast future fleet changes to optimize hardware resource allocation with 88.38% accuracy. • Automated a recurring manual report for Finance by improving the API for search queries. | |
| | Avatar Works | Xiamen, China |
| | Software Engineering Intern, Natural Language Processing | Summer 2017 |
| | <ul style="list-style-type: none"> • Assisted with chatbot development by analyzing Chinese textual data using NLTK. | |

SKILLS **Research** • Contextual Inquiry • Field Observation • Grounded Theory • Interview • Survey • Software Usability Testing • Thematic Analysis • Content Analysis • Statistical Analysis

Programming • TypeScript • JavaScript • HTML/CSS • Python • Node.js • Jupyter • React • SQL • \LaTeX • Java • R • Haskell • GitHub & Git • CI/CD • Agentic Software Development

Tools • MAXQDA • Condens • Qualtrics • Figma • Sketch • Adobe Premiere Pro • Adobe Photoshop

Domain Knowledge • Domain-Specific Languages • Time Series Forecasting • Machine Learning

ACTIVITIES • Piano • Flute (modern & baroque) • Figure Skating