

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 Cell: (781) 493-2218 Website: rlisahuang.com |
| RESEARCH INTERESTS | I study programmers of all kinds and build programming systems for them, leveraging techniques in human-computer interaction, programming languages, education, and occasionally machine learning. I aim to design programming systems that account for user and community needs, ease communication, and support creativity. | |
| 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 Assistants (tentative)</i>• Committee: Sorin Lerner (Chair), Michael Coblenz, Philip Guo, and James 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 | |
| RESEARCH EXPERIENCE | University of California, San Diego | La Jolla, CA |
| | Graduate Student Researcher (<i>Supervisor: Prof. Sorin Lerner</i>) | Aug. 2020 - Present |
| | <i>Skills:</i> Full-Stack Development, Large-Scale User Studies, Mixed Methods, Grounded Theory | |
| | <ul style="list-style-type: none">• Designing interface advances for computational notebooks.• Designing AI-powered learning and instructional assistants for STEM education.• Developing and evaluating live programming systems for various domains, including front-end web development, human-AI interaction, and education. [Pu.2, Pu.4, Pu.6, T.4-6, T.10, P.10]• Investigated programming techniques for prompting, editing, and understanding AI-generated content. [Pu.5]• Studied debugging strategies in different paradigms. [Pu.3, T.8] | |
| | Apple Inc. | Pittsburgh, PA |
| | HCI Research Intern, AI/ML (<i>Supervisor: Dr. Mary Beth Kery</i>) | Apr. 2023 - Sep. 2023 |
| | <i>Skills:</i> Full-Stack Development, UI/UX Design, Ethnography, Machine Learning | |
| | <ul style="list-style-type: none">• Investigated how novices approach machine learning using qualitative methods.• Developed and evaluated novel interaction techniques for machine learning. [T.9] | |
| | Microsoft Research | Redmond, WA |
| | Research Intern, RiSE (<i>Supervisor: Dr. Nikolaj Bjørner</i>) | Jun. 2022 - Sep. 2022 |
| | <i>Skills:</i> Full-Stack Development, Iterative Design, Qualitative Analysis | |
| | <ul style="list-style-type: none">• Developed the Z3Guide, a 100% client-side web environment for the Z3 theorem prover.• Organized an online Z3 learning workshop where 112 participants learned Z3 and SMT solving using the Z3Guide. [Pr.1, T.7] | |
| | Wellesley College | Wellesley, MA |
| | Student Researcher (<i>Supervisor: Prof. Franklyn Turbak</i>) | Jan. 2019 - Jul. 2020 |
| | <i>Skills:</i> Domain-Specific Language Design, Quantitative Analysis of User Interactions | |

- Designed and developed a text language for App Inventor’s visual coding blocks called Venbrace and its tooling (editor and parser), which were evaluated and enhanced through online controlled experiments. [Pu.1, T.2-3]

Research Assistant (*Supervisor: Prof. Panagiotis Metaxas*)

Jan. 2018 - Oct. 2018

Skills: Data Visualization, Iterative Design

- Implemented an interactive visualization for **TwitterTrails**, a platform for Tweet trustworthiness assessment. [T.1]
- Developed data cleaning and analysis scripts for **TwitterTrails**’ database.

PUBLICATIONS AND PREPRINTS

[†]Equal contribution.

Preprints

- Pu.2 Ilana Shapiro, Cheng-I Wang, **Ruanqianqian (Lisa) Huang**, Hao-Wen Dong, Zachary Novack, Taylor Berg-Kirkpatrick, and Sorin Lerner. Generating Composite Hierarchical Structure using Music Corpora. In preparation. 2024.
- Pr.1 **Ruanqianqian (Lisa) Huang**, Ayana Monroe, Nikolaj Bjørner, Peli de Halleux, and Sorin Lerner. Designing Student-Centered Experience for Logic Modeling. Under review (title modified for anonymous review). 2024.

Publications

- Pu.6 **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.
- Pu.5 Ksra Ferdowsi[†], **Ruanqianqian (Lisa) Huang**[†], 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.
- Pu.4 **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.
- Pu.3 **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.
- Pu.2 **Ruanqianqian (Lisa) Huang**, Ksra 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.
- Pu.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.

TALKS

- T.10 “Unfolding State Changes via Live State-First Debugging”. *LIVE Workshop*, Oct. 2023.
- T.9 “Robust ML Prototyping with Adaptive Guidance”. *Apple HCI Sync*, Aug. 2023.
- T.8 “How do Haskell programmers debug?”. *PLATEAU Workshop*, Feb. 2023.
- T.7 “User-Enhanced Learning Experience of Symbolic Logic Solving”. *Research in Software Engineering Group, Microsoft Research; Women in Compilers and Tools Meetup Series, LLVM Organization; HCI Intern Seminar Series, Microsoft Research*, Aug. 2022.

- T.6 “Impact of Live Programming on Student Learning in a CS1 Course”. *Computing Education Research Seminar, UC Davis*, Nov. 2022; *SIGCSE Technical Symposium*, Mar. 2022.
- T.5 “Live Front-End Event Handling”. *Programming Systems Group, UC San Diego*, Nov. 2021.
- T.4 “Programming with Live Programming”. *Programming Systems Group, UC San Diego*, Apr. 2021.
- T.3 “The Design and Implementation of Venbrace, A Text Language for App Inventor”. *App Inventor Team, Massachusetts Institute of Technology*, May 2020.
- T.2 “Bidirectional Conversion between Blocks and Text for App Inventor”. *Blocks and Beyond Workshop*, Oct. 2019; *MIT App Inventor Summit*, Aug. 2019.
- T.1 “Interactive Visualizations and Credibility Evaluations of News Stories on TwitterTrails”. *Wellesley College Summer Research Summit*, Aug. 2018.

TEACHING AND MENTORING EXPERIENCE

University of California, San Diego

La Jolla, CA

- **Instructor**, CSE 12 - Basic Data Structures and Object-Oriented Design (N=46) Summer 2024
- **Instructor**, CSE 193 - Intro to CS Research (N=53) Fall 2023
- **Teaching Assistant**, CSE 291 - LLMs, Programming, and HCI (N=34) Spring 2024
- **Teaching Assistant**, CSE 8A - Intro to Programming in Python (N=601) Fall 2022
- **Teaching Assistant**, CSE 230 - Graduate Programming Languages (N=200+) Fall 2021
- **Research Mentor** for Kaleigh Beachler (UCSD undergraduate student) on project *AI Tutor for Programming Education*; winner of UCSD Triton Research & Experiential Learning Scholars (TRELS) for summer 2024 (20% acceptance rate) 2024 - current
- **Research Mentor** for Ilana Shapiro (UCSD PhD student) on project *Synthesizing Composite Hierarchical Structure from Music Corpora*; submission under review at ISMIR 2024 Fall 2023 - current
- **Research Mentor** for Justin Yao Du, Mandeep Syal, and Thanh-Nha Tran (UCSD undergraduate students, ERSP participants) on project *Live Programming for Unit Testing*; presented in 2022 PLDI Student Research Competition 2021 - 2022

Wellesley College

Wellesley, MA

- **Tutor**, CS 251 - Principles of Programming Languages Fall 2019
- **Tutor**, CS 230 - Data Structures Spring & Fall 2018

Girls Who Code

Wellesley, MA

- Club Facilitator and Teaching Assistant, Intro to Web Programming Fall 2017

INDUSTRY EXPERIENCE

Apple Inc.

Cupertino, CA

- Data Analysis Intern, Cloud Infrastructure Summer 2019
- 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
- Assisted with chatbot development by analyzing Chinese textual data using NLTK.

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| HONORS AND AWARDS | UCSD CSE Award for Excellence in Teaching (awarded to 1 PhD student) | 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 |
| | 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 |
| PROFESSIONAL SERVICE | Program Committee: LIVE Workshop (2024) | |
| | Artifact Evaluation Committee: <Programming> (2024) | |
| | Reviewer: SIGCSE TS (2024, 2025), TOCE | |
| | External Paper Reviewer: UIST (2023), CHI (2022, 2024) | |
| INTERNAL SERVICE | Co-President, UCSD Graduate Women in Computing | 2023 - 2024 |
| | Student Volunteer, Symposium on Principles of Programming Languages (POPL) | 2023 |
| | 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 |
| SKILLS | <p>Programming Languages & Tools. • TypeScript • JavaScript • HTML/CSS • Node.js • React • Python • \LaTeX • Java • Swift & SwiftUI • R for data analysis and visualization • Haskell • Scala • C • GitHub & Git • CI/CD</p> <p>Design & Arts. • Interface Design (Figma & Sketch) • Interaction Design • Adobe Premiere Pro • Adobe Photoshop</p> <p>Domain Knowledge. • Interview • Surveys • Contextual Inquiry • Field Study • Grounded Theory • Software Usability Testing • Statistical Analysis • Thematic Analysis • Parsing • Compilation • Program Slicing • Software Instrumentation • Domain-Specific Languages • Transfer Learning</p> | |

REFERENCES

Sorin Lerner (Thesis Advisor)
Professor and Department Chair
Dept. of Computer Science and Engineering
University of California San Diego
Email: lerner@cs.ucsd.edu

Michael Coblenz
Assistant Professor
Dept. of Computer Science and Engineering
University of California San Diego
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Philip J. Guo
Associate Professor
Dept. of Cognitive Science
University of California San Diego
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Mary Beth Kery
Research Scientist
Human-Centered Machine Intelligence
Apple Inc.
Email: mkery@apple.com