Ruanqianqian (Lisa) Huang

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Research Interests

Programming Systems, Human-Computer Interaction, Cognitive Science

Education

University of California San Diego, La Jolla, CA
Ph.D. Student in Computer Science — 2020 - Present
M.S. in Computer Science — 2020 - 2022
Advisor: Sorin Lerner

Wellesley College, Wellesley, MA — 2016 - 2020
B.A. (summa cum laude) in Computer Science (Honors) & Cognitive and Linguistic Sciences
Thesis: The Design and Implementation of Venbrace, a Text Language for App Inventor
Committee: Franklyn Turbak, Eni Mustafaraj, Catherine Grevet Delcourt

Technical Skills

Significant experience with:
Programming Languages: TypeScript, JavaScript, HTML/CSS, Python, Java
Tools/Libraries: Node.JS, React, pandas, matplotlib, ggplot2, dplyr, ANTLR4

Moderate experience with:
Programming Languages: R, Scala, Haskell, MySQL, C
Tools/Libraries: D3.js, PyDruid, Flask, Scikit-learn, NLTK

Research Experience

Graduate Student Researcher, **Programming Systems Group, UC San Diego** — 2020.8 - Present
Advisor: Sorin Lerner | *Skills:* Full-Stack Development, Large-Scale User Studies, Qualitative Analysis

* Investigating programmer strategies in different contexts of programming. [w.2]
* Developing and evaluating stand-alone as well as Visual Studio Code-based programming tools for boosting programmer productivity and intuition. [t.4-5]
* Revealed that college students considered a Live Programming tool preferable and more helpful for learning through a quarter-long study (N=237) in a naturally occurring introductory computer science class. [c.1, t.6]

Research Intern, **Research in Software Engineering (RiSE), Microsoft Research** [t.7] — 2022.6 - 2022.9
Advisors: Nikolaj Bjørner, Peli de Halleux | *Skills:* Full-stack Development, Iterative Design, Qualitative Analysis

* Developed the Online Z3 Guide, a 100% client-side web-based programming/learning environment for Z3.
* Designed and improved the well-perceived Z3Guide using qualitative methods.
* Organized an online Z3 learning workshop where 112 participants learned Z3 and SMT solving using the Z3Guide.

Student Researcher, **Department of Computer Science, Wellesley College** [bt.1, w.1, p.2, t.2-3] — 2019.1 - 2020.7
Advisor: Franklyn Turbak | *Skills*: 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 improved through online controlled experiments.

Undergraduate Research Assistant, **HCI Lab, Wellesley College** [p.1, t.1] — 2018.1 - 2018.10
Advisors: Panagiotis Metaxas and Catherine Delcourt | *Skills*: Data Visualization, Iterative Design

* Implemented an interactive visualization for TwitterTrails, a platform for Tweet trustworthiness assessment.
* Developed data cleaning and analysis scripts for TwitterTrails' database.

Research Artifacts

Ruanqianqian (Lisa) Huang, Elizaveta Pertseva, Michael Coblenz, and Sorin Lerner. 2023. How do Haskell programmers debug?. Accepted to *the 13th annual workshop on the intersection of HCI and PL (PLATEAU '23)*. [w.2]

Ruanqianqian (Lisa) Huang, Kasra Ferdowsi, Ana Selvaraj, Adalbert Gerald Soosai Raj, and Sorin Lerner. 2022. 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)*. [c.1]

Ruanqianqian Huang. 2020. *The Design and Implementation of Venbrace, a Text Language for App Inventor*. Bachelor's thesis. Wellesley College. [bt.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, USA, 2019, pp. 87-89. [w.1]

Ruanqianqian Huang and Franklyn Turbak. Bidirectional Conversion between Blocks and Text for App Inventor. Poster at *MIT App Inventor Summit*, Cambridge, MA, 2019. [p.2]

Ruanqianqian Huang, Beryce Garcia, Catherine Delcourt, Panagiotis Metaxas, and Orit Shaer. Interactive Visualizations and Credibility Evaluations of News Stories on TwitterTrails: A User-Centered Approach. Poster at *Wellesley College Summer Research Program*, Wellesley, MA, 2018. [p.1]

Talks

Towards Live Programming for Interactive GUI Applications Oct. 2022
Research Exam, Computer Science and Engineering, UC San Diego, La Jolla, CA

User-Enhanced Learning Experience of Symbolic Logic Solving Aug. 2022 [t.7]
Research in Software Engineering Group, Microsoft Research, Redmond, WA
Women in Compilers and Tools Meetup Series, LLVM Organization, Virtual
HCI Intern Seminar Series, Microsoft Research, Redmond, WA

Impact of Live Programming on Student Learning in a CS1 Course
UC Davis Computing Education Research Seminar (CERD), Virtual Nov. 2022 [t.6]
SIGCSE Technical Symposium 2022, Providence, RI Mar. 2022 [t.6]

Live Front-End Event Handling Nov. 2021 [t.5]
Programming Systems Group, UC San Diego, La Jolla, CA

Programming with Live Programming Apr. 2021 [t.4]
Programming Systems Group, UC San Diego, La Jolla, CA

The Design and Implementation of Venbrace, a Text Language for App Inventor May 2020 [t.3]
App Inventor Team, Massachusetts Institute of Technology, Cambridge, MA

Bidirectional Conversion between Blocks and Text for App Inventor Aug. 2019 [t.2]
MIT App Inventor Summit, Cambridge, MA

Interactive Visualizations and Credibility Evaluations of News Stories on TwitterTrails Aug. 2018 [t.1]
Wellesley College Summer Research Program, Wellesley, MA

Industry Experience

Data Analysis Intern, **Cloud Infrastructure, Apple Inc.,** Cupertino, CA 2019.5 - 2019.8
* 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.

Software Engineering Intern, **NLP Lab, Avatar Works,** Xiamen, Fujian, China 2017.6 - 2017.7
* Assisted with chat bot development by processing and analyzing Chinese textual data using NLTK.

Teaching Experience

Teaching Assistant, **Intro to Programming in Python, UCSD Computer Science & Engineering** Fall 2022
* Leading a team of five teaching staff, prepared weekly lab assignments and discussion section materials.
* Led weekly labs and discussion sections for about 50 students.
* Hosted weekly office hours to provide help both in a group setting and on one-on-one basis.

Teaching Assistant, **Graduate Programming Languages, UCSD Computer Science & Engineering** Fall 2021
* Assisted Professor Ranjit Jhala in grading and holding office hours for 200 students.

Tutor, **Principles of Programming Languages, Wellesley College** Fall 2019
* Moderated discussions and helped students debug their homework assignments in office hours.

Tutor, **Data Structures, Wellesley College** Spring 2018, Fall 2018
* Moderated discussions and helped students debug their homework assignments in office hours.
* Delivered individual tutoring sessions on a per request basis.
* Assisted instructors in grading homework assignments.

SERVICE

Mentorship Program Co-Chair, **Graduate Women in Computing, UCSD CSE** 2022.6 - Present
Student Reviewer for DEI Fellowship and Rotations, **PhD Admissions, UCSD CSE** 2023.1 - 2023.2
Application Reviewer, **Early Research Scholars Program 2022 - 2023, UCSD CSE** 2022.5
Student Reviewer for DEI Fellowship, **PhD Admissions, UCSD CSE** 2022.1 - 2022.2
Mentor, **Early Research Scholars Program, UCSD CSE** 2021.9 - Present
Student Reviewer for DEI Fellowship, **PhD Admissions, UCSD CSE** 2021.1 - 2021.2
Executive Board Member, **Wellesley College Chamber Music Society** 2017.9 - 2020.5
Club Facilitator and TA, **Girls Who Code Club (Wellesley, MA)** 2017.9 - 2017.12
Mentor, **Harvard PBHA Chinatown Teen** 2016.9 - 2017.5

ADVISING

Justin Yao Du (UCSD Undergraduate, Live Programming for Unit Testing) 2021.9 - 2022.6
Mandeep Syal (UCSD Undergraduate, Live Programming for Unit Testing) 2021.9 - 2022.6
Thanh-Nha Tran (UCSD Undergraduate, Live Programming for Unit Testing) 2021.9 - 2022.6

HONORS

Student Scholarship for PLMW, POPL 2021 2021
Trustee Scholar, Wellesley College 2020
Academic Achievement Award in Computer Science, Wellesley College 2020
Sigma Xi Honors Research Society, Wellesley College 2020
Jerome A. Schiff Fellowship, Wellesley College 2019
Phi Beta Kappa Honor Society (elected as a junior), Wellesley College 2019
Wellesley College Science Center Research Award 2018
Wellesley College Music Department Sandra Wieland Howe Scholarship 2017