

Ruijia (Regina) Cheng

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Research Keywords:

Human-computer Interaction; Human centered machine learning; Developer tools; Creativity support; End-user programming; Data literacies; Social computing; Learning technology

Education

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| 2023 | University of Washington
<i>Doctor of Philosophy</i> in Human Centered Design & Engineering
Committee: Benjamin Mako Hill, Jennifer Turns, Sayamindu Dasgupta, Amy Zhang |
| 2021 | University of Washington
<i>Master of Science</i> in Human Centered Design & Engineering |
| 2018 | University of California, San Diego
<i>Magna Cum Laude</i>
<i>Bachelor of Science</i> in Cognitive Science with a Specialization in Computation
<i>Bachelor of Science</i> in Mathematics: Applied Science |

Professional Research Experiences

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|-----------------|---|-------------|
| 07/23 – present | Apple Human Centered Machine Intelligence (HCMI)
AI/ML Resident.
<i>Supervisor: Jeff Nichols.</i> <ul style="list-style-type: none"> Led and collaborated in research projects that employ machine learning and Large Language Models (LLMs) for UI understanding, creativity, and developer support [C2, U1, U2]. Designed and conducted human centered research around AI systems; designed and build AI-powered research prototypes. Presented research outcomes to VP-level directors and in company-wide summits. | Seattle, WA |
| 09/18 – 06/23 | University of Washington Human Centered Design & Engineering
Graduate Research Assistant. <ul style="list-style-type: none"> Led mix method research projects to understand and design for end-user programmers in online communities [C4, C5], data science collaboration and communication [C9], visual block-based programming systems for data literacy [C3], and creative feedback exchange [C6, C10]. | Seattle, WA |
| 06/22 – 09/22 | Microsoft Research Software Analysis and Intelligence in Engineering Systems
PhD Research Intern.
<i>Supervisors: Denae Ford, Tom Zimmermann.</i> <ul style="list-style-type: none"> Led a multi-phase research project (interview, prototyping, & design probe) to support developers build | Redmond, WA |

trust in LLM-powered code generation tools through sociotechnical affordances [J1].

- Collaborated in research about responsible interface design in LLM-powered code generation tools [C1].
- Contributed to metrics of trust in LLM for software development.

09/21– **Dataminr** | Human AI Innovation New York City, NY

12/21 **PhD Research Intern.**

Supervisors: Alison Smith-Renner, Ke Zhang.

- Led and collaborated in research on human-in-the-loop text summarization [C7, C8, S1].
- Conducted a systematic literature review and synthesized 600+ papers into design patterns.
- Developed interactive prototypes and conducted design probe interview studies with crowd workers.
- Established design guidelines for internal human-AI collaborative text summarization tools.

06/21– **Northwestern University** | Community Data Science Collective Evanston, IL

09/21 **Visiting Researcher.**

- Led a large-scale quantitative study on data literacy and social media discussion about COVID-19.
- Built datasets of cross-platform social media activities about COVID-19.

03/21– **Microsoft** | Education via i2e LLC Redmond, WA

06/21 **Project Intern.**

Supervisor: Jonathan Grudin.

- Designed and developed K-12 curricula, user scenarios and interaction guides for Search Coach, a K-12 education product.

06/20 – **Facebook** | Watch Menlo Park, CA

09/20 **UX Research Intern.**

- Designed & conducted usability tests, 20k+ in-app surveys in 5 countries, and 20k+ user logs analysis.
- Impacted the design of recommendation algorithms and video players.
- Collaborated effectively with cross-functional teams (engineering, design, and data) and vendors.

10/16 – **University of California, San Diego** | Design Lab La Jolla, CA

01/18 **Undergraduate Research Assistant.**

Supervisors: Steven Dow, Joel Chan, Jim Hollan.

- Led survey and online experiment studies on crowd creativity and problem framing [S2].
- Conducted thematic analyses and topic modeling on narrative patterns in computational notebooks.

Publications *indicates equal contribution of the authors

Under Review Manuscripts

- U1. **Cheng, R.**, Barik, T., Leung, A., Hohman, F., Nichols, J. 2024. BISCUIT: Scaffolding LLM-generated Code with Ephemeral UIs in Computational Notebooks. <https://arxiv.org/abs/2404.07387>
- U2. Tseng, T., **Cheng, R.**, Nichols, J. 2024. Keyframer: Empowering Animation Design using Large Language Models. <https://arxiv.org/abs/2402.06071>

Journal Publications

- J1. **Cheng, R.**, Wang, R., Zimmermann, T., & Ford, D. 2023. "It would work for me too": How Online Communities Shape Software Developers' Trust in AI-Powered Code Generation Tools. Accepted to ACM Transactions on Interactive Intelligent Systems (TiIS).

Peer-reviewed Conference Proceedings

- C1. Wang, R., **Cheng, R.**, Ford, D., Zimmermann, T. Investigating and Designing for Trust in AI-powered Code Generation. 2024. Accepted to the ACM Conference on Fairness, Accountability, and Transparency (FaccT 2024).
- C2. Taeb, M., Swearngin, A., Schoop, E., **Cheng, R.**, Jiang, Y., & Nichols, J. AXNav: Replaying Accessibility Tests from Natural Language. 2024. Accepted to the ACM Conference on Human Factors in Computing Systems (CHI 2024).
- C3. **Cheng, R.**, Dangol, A., Ello, F., Wang, L., Dasgupta, S. Concepts, practices, and perspectives for developing computational data literacy: Insights from workshops with a new data programming system. 2023. Proceedings of the ACM Interaction Design and Children Conference (IDC 2023).
- C4. **Cheng, R.**, Dasgupta, S., Hill, B. How Interest-Driven Content Creation Shapes Opportunities for Informal Learning in Scratch: A Case Study on Novices' Use of Data Structures. 2022. Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI 2022). *Best Paper Honorable Mention Award (Top 5%)*
- C5. **Cheng, R.**, Hill, B. Many Destinations, Many Pathways: A Quantitative Analysis of Legitimate Peripheral Participation in Scratch. 2022. Accepted to the ACM Human Computer Interaction, Computer Supported Cooperative Work and Social Computing Conference (CSCW 2022).
- C6. **Cheng, R.**, * Frens, J.* Feedback Exchange and Online Affinity: A Case Study of Online Fanfiction Writers. 2022. Accepted to the ACM Human Computer Interaction, Computer Supported Cooperative Work and Social Computing Conference (CSCW 2022).
- C7. **Cheng, R.**, Smith-Renner, A., Zhang, K., Tetreault, J., Jaimes, A. Mapping the Design Space of Human-AI Interaction in Text Summarization. 2022. Accepted to the North American Chapter of the Association for Computational Linguistics Special Theme: Human-Centered Natural Language Processing (NAACL 2022).
- C8. Lai, V., Smith-Renner, A., Zhang, K., **Cheng, R.**, Zhang, W., Tetreault, J., Jaimes, A. An Exploration of Post-Editing Effectiveness in Text Summarization. 2022. Accepted to the North American Chapter of the Association for Computational Linguistics Special Theme: Human-Centered Natural Language Processing (NAACL 2022).
- C9. **Cheng, R.**, Zachry, M. Building Community Knowledge in Online Data Science Competitions: Motivation, Practices and Challenges. 2020. Proceedings of the ACM Human Computer Interaction, Computer Supported Cooperative Work and Social Computing (CSCW 2020).
- C10. **Cheng, R.**, Zeng, Z., Liu M., Dow, S. Critique Me: Exploring How Creators Publicly Request Feedback in an Open Online Community. 2020. Proceedings of the ACM Human Computer Interaction, Computer Supported Cooperative Work and Social Computing (CSCW 2020).

Short Papers, Posters, and Workshop Papers

- S1. **Cheng, R.**, Smith-Renner, A., Zhang, K., Tetreault, J., Jaimes, A. Trust and Reliance in Human-AI Collaborative Text Summarization. 2022. Workshop paper in the Trust and Reliance in Human-AI Teams workshop in the ACM Conference on Human Factors in Computing Systems (CHI 2022).

- S2. **Cheng, R.**, De Castro, J., Dow, S., Chan, J. 2018. An Exploratory Study of Problem Framing in Distributed Collaborative Design. Short paper in the ACM Group Conference (Group 2018).
- S3. Singh, F., Smith, A., Dudeck, N., Herrera, E., Lee, J., Yang, Z., **Cheng, R.**, Pineda, J. 2016. A Pilot Study to Assess the Effects of EEG-Gamma Neurofeedback on Working Memory in Schizophrenia Patients. Poster in the Society for Neuroscience 2016 Annual Conference (SfN 2016).

Awards & Honors

- 2023 EECS Rising Stars
- 2023 Special Recognition of Outstanding Reviews, CHI 2024
- 2022 Best Paper Honorable Mention Award, CHI 2022
- 2020 Special Recognition of Outstanding Reviews, CSCW 2020
- 2014–18 Provost Honor, University of California, San Diego

Invited Talks

- 2023 “Online Communities and Trust in AI-powered Code Generation tools.” Poster Presentation at the EECS Rising Stars Workshop. Georgia Institute of Technology. Atlanta, GA.
- 2023 “Understanding and designing for community-supported programming with data and AI.” Presentation in the department of Information Science & Technology, George Mason University. Fairfax, VA.
- 2023 “Supporting Rising Programmers through a Sociotechnical Lens.” Presentation at Apple Machine Learning Research. Webinar.
- 2022 “Developer’s Trust in AI-powered Code Generation.” Presentation at Microsoft Research. Webinar.
- 2022 “Supporting Computational Learning in Online Communities.” Presentation at Microsoft MakeCode. Microsoft Research. Webinar.
- 2022 “Understanding and Supporting Informal Learning in Online Communities.” Presentation at The Expertise@scale Salon. Emory University. Webinar.
- 2022 “All Communities Are Learning Communities.” Main speaker at The Science of Community Dialogues. Community Data Science Collective. Webinar.
- 2022 “Online Communities and Trust in AI-powered Code Generation tools.” Presentation at Microsoft Research HCI seminar. Microsoft Research. Redmond, WA.
- 2021 “Data Scientists or Conspiracists: Critical Discourses about COVID Data among Pro- and Anti-vaccine Tweets.” Presentation at the HCDE research seminar (Autumn 2021). University of Washington. Webinar.
- 2021 “Imagining Future Design of Tools for Youth Data Literacies.” Workshop organizer at the Connected Learning Summit 2021. Webinar.
- 2019 “Feedback-Seeking in Online Fanfiction Communities.” Poster presentation at the 2019 HCDE Research Showcase. University of Washington. Seattle, WA.

- 2017 “Plug-N-Talk: An Affordable Solution to Hearing Loss.” Finalist presentation at the 2nd UCSD ECE Annual Design Competition. University of California, San Diego. San Diego, CA.

Teaching

Guest Lectures

- 2019, 20 “A Crash Course on Statistics for Usability Testing.” HCDE Usability Testing, University of Washington.

Directed Research Group

- 2022 “Evaluative Study on Dataland: Supporting Novices to Analyze Data.” University of Washington.
2021, 22 “Supporting Critical Capacities in Data Science through Online Interactions.” University of Washington.

Teaching Assistant

- 2020, 21 HCDE Capstone. University of Washington. *Students won Best Design & Engineering awards.*
2020, 21 HCDE Capstone Project Planning. University of Washington.
2020 HCDE Qualitative Methods. University of Washington.
2019 HCDE Usability Testing. University of Washington.
2019 HCI+D Formative UX Research Studio. University of Washington.

Mentoring

- 2022–23 Cindy Gong. Undergraduate Honor Thesis.
2019 Ziwen Zeng. Undergraduate summer intern.
2019 Maysnow Liu. Undergraduate summer intern.

Academic Services

- 2024 Associate Chair, ACM CHI
2024 Associate Chair, ACM DIS
2023 Program Committee, ACM FAccT
2023 Reviewer, ACM TOCE
2023 Reviewer, ACM UIST
2023 Reviewer, ACM Creativity & Cognition
2022, 23 Reviewer, ACM TiiS
2022 Student Ambassador, UW DUB
2020–22 Reviewer, ACM CSCW
2020, 22 Reviewer, ACM IDC

2019, 21 Reviewer, ACM CHI

2021 Doctoral Colloquium Organizer, UW DUB

2021 Workshop Organizer, Connected Learning Summit

2020 Application Reviewer, UW HCDE Master program

2019 Workshop Organizer, Community Data Science Collective