EDA (RUTING) ZHANG

eda.zhang@wisc.edu Google Scholar Portfolio

Summary

I am a researcher and a designer. My goal is to **use technologies to create equitable and engaging learning for people from all backgrounds.** In my research, I investigate **how people learn with, through, and about interactive artifacts in socially situated contexts**. I design digital and tangible tools to **understand, support and facilitate people's learning, collaboration, and creativity** in diverse learning environments using research methods including design-based research, mixed method and data mining/ai.

Education

Fall 2018 – now

University of Wisconsin–Madison, WI, US

- Ph.D., Curriculum & Instructions (Design, Informal, Creative Ed)
- Minor in Human-centered Data Science
- Advisor: Prof. Matthew Berland & Prof. Peter Wardrip

Fall 2012 – Spring 2014

Michigan State University, MI, US

- M.A. Linguistics
- Advisor: Prof. Paula Winke & Prof. Charlene Polio

Fall 2008 – Spring 2012

Shanghai Normal University, Shanghai, China

- B.S. Education Management
- Minor in French
- Advisor: Prof. Wei Zhu

Skills

Programming

R/Python/Stata/JS/H5/CSS/P5.js

Research Methods

Design-based research/Multivariate regression/G(g)rounded theory/Case study/Quantitative ethnography /Data Mining/Think-aloud & Interviews/ Participatory Design/Factor Analysis

Design

Ps/Pr/Id/Lr/Ch/Ae/Figma/Sketch/Unity/Rhino/Sketchup/Storyboarding/Visualization/Wire-framing/Prototyping

Research Experience

Investigate Collaborative Computational Literacy Development in a Game, 2023- ongoing

Advisor: Prof. Matthew Berland(UW-Madison) ; Prof. Leilah Lyons (NSF); Dr. Stephen Uzzo (MoMath)

Investigate a collaborative game (Rainbow Agents) that foregrounds computer science and social interaction to better serve learners from underserved STEM communities. Design studies, conduct surveys and interviews with diverse groups of learners. Analyze game log, quantitative and qualitative data to investigate the socially embedded computational learning and the impact of the interactive game in a science museum.

Data-driven, Human-centric Representations to Empower Decision-making in Complex Learning Environments, 2023-ongoing

Advisor: Prof. Leilah Lyons (NSF); Dr. Stephen Uzzo (MoMath)

Explore and identify how to support human's decision making in complex learning environments through data representations. Investigate, design and implement various data visualizations and representations to enhance learners' causal effect inferences.

Making a Difference: Engaging Youths in Engineering and Computer Science through Computational Making and Social Entrepreneurship, 2021-2023

Advisor: Dr. Stephen Uzzo (MoMath)

Investigate how to engage youths in engineering and computer science through computational making and social entrepreneurship. Assess the learning and social impact of the computational making program (*Innovate Institute*) through qualitative and quantitative data.

Agency, Facilitation, and Learning Engagement in Maker Activities, 2020-2022

Advisor: Prof. Peter Wardrip (UW Madison)

Investigated distinctive attributes of makerspace activities in engaging learners. Expanded the insights of the role of facilitator, approaches of facilitations for makerspace through developing a holistic framework of making activities, materials, processes and learners social learning practices (seeking and sharing resources).

Advancing Equity and Inclusion in Computer Science Education, 2018-2020

Collaborator: Prof. Adalbert Gerald Soosai Raj (UC San Diego)

Live-coding project: Investigated live-coding as a pedagogy in teaching programming using mixed methods.

Language in CS Education: Examined the effect of using one's native language on students' engagement, interaction and learning outcome in computer science classes.

Independent Game Design & Development, 2018

Collaborator: with Prof. Malte Jung (Cornell); Dr. Gabe Culbertson (Google); Dr. Solace Shen (Cornell)

Designed, and researched Storytelling games for foreign language classroom use.

Sensing Curiosity in Play and Responding (SCIPR) Project, 2016

Collaborator: Prof. Jessica Hammer; Prof. Geoff Kaufman (Carnegie Mellon University); Dr. Alexandra To (Northeastern University); Elaine Faith (Shell Game)

Designed various board games for STEM learning. Collaborated with an interdisciplinary team in conducting Design-based research to investigate and encourage curiosity in STEM learning through playful learning for marginalized middle school students.

Publications & Presentations

1. **Zhang, E.** (2023). Analyzing Youth's Problem Solving in Computational Making through a Community-Engaged Maker Program.

2. **Zhang, E**., White, A., Todd, K.; Wardrip, P. (2022, June). Exploring Different Facilitator Roles in Maker-based Learning. In *Proceedings of the 16th International Conference of the Learning Sciences* (pp. 2070-2071).

3. Selvaraj, A., **Zhang, E**., Porter, L., & Soosai Raj, A. G. (2021, June). Live Coding: A Review of Literature. In *Proceedings of the 26th ACM Conference on Innovation and Technology in Computer Science Education V. 1* (pp. 164-170).

4. Raj, A. G. S., Gu, P., **Zhang, E**., Williams, J., Halverson, R., & Patel, J. M. (2020, February). Live-coding vs Static Code Examples: Which is better with respect to Student Learning and Cognitive Load?. In *Proceedings of the Twenty-Second Australasian Computing Education Conference* (pp. 152-159).

5. Raj, A. G. S., Zhang, H., Abhyankar, V., Mukerjee, S., **Zhang, E**., Williams, J., ... & Patel, J. M. (2019, November). Impact of bilingual cs education on student learning and engagement in a data structures course. In *Proceedings of the 19th Koli Calling International Conference on Computing Education Research* (pp. 1-10).

6. Pellicone, A., Lyons, L., Kumar, V., **Zhang, E**., & Berland, M. (2019, October). Rainbow Agents: A Collaborative Game For Computational Literacy. In *Extended Abstracts of the Annual Symposium on Computer-Human Interaction in Play Companion Extended Abstracts* (pp. 597-604).

7. Soosai Raj, A. G., **Zhang, E**., Mukherjee, S., Williams, J., Halverson, R., & Patel, J. M. (2019, July). Effect of native language on student learning and classroom interaction in an operating systems course. In *Proceedings of the 2019 ACM Conference on Innovation and Technology in Computer Science Education* (pp. 499-505).

8. To, A., Holmes, J., Fath, **E., Zhang**, E., Kaufman, G., & Hammer, J. (2018). Modeling and designing for key elements of curiosity: Risking failure, valuing questions. *Transactions of the Digital Games Research Association, 4(2)*.

9. **Zhang, E.**, Culbertson, G., Shen, S., & Jung, M. (2018, April). Utilizing narrative grounding to design storytelling games for creative foreign language production. In *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems* (pp. 1-11).

10. To, A., Fan, A., Kildunne, C., **Zhang, E**., Kaufman, G., & Hammer, J. (2016, October). Treehouse Dreams: A Game-Based Method for Eliciting Interview Data from Children. In *Proceedings of the 2016 Annual Symposium on Computer-Human Interaction in Play Companion Extended Abstracts* (pp. 307-314).

11. To, A., Fath, E., **Zhang, E**., Ali, S., Kildunne, C., Fan, A., ... & Kaufman, G. (2016). Tandem Transformational Game Design: A Game Design Process Case Study. In *Proceedings of the International Academic Conference on Meaningful Play*.

12. **Zhang, E** (2019) Designing Public Interactive Display in Children's Museum. Presented as a poster at the *Learning Sciences Graduate Student Conference (LSGSC) 2019.* Northwestern University, Evanston, IL, USA. *(Poster Presentation)*

13. **Zhang, E.,** Kumar, V. (2019). Designing Collaborative Museum Games for Engaging Computational Thinking Practices. Presented as a poster at the *Learning Sciences Graduate Student Conference (LSGSC) 2019.* Northwestern University, Evanston, IL, USA. *(Poster Presentation)*

Professional Employment

Fall 2021- Fall 2023 — Research Associate, NYSCI
Investigate how to promote interaction and STEM learning in informal environments especially for traditionally underrepresented groups in the STEM fields.

Fall 2019 – Fall 2020 — Graduate Research Assistant, University of Wisconsin–Madison
Designing for Thinking Dispositions in STEM Classes Using Simple VR
Designed and studied an interactive simple VR tool to engage intermediate school students thinking dispositions in STEM classes.

Fall 2018- now — Teaching Assistant, University of Wisconsin–Madison
with Dr. Krista-lee Malone
Videogames and Learning

Aug 2018, Jan 2017 — Project Manager, Hujiang Educational Technology Inc., Shanghai

Lead AI Learning Lab in researching and developing intelligent tutors for the company. Supervised by Dr. Donghai Xia (Microsoft)

Aug 2014- May 2016 **High School Chinese Instructor**, Kiski Area High School, Pennsylvania
Developed and implemented technology-integrated Chinese lessons for Chinese learners of all proficiency levels.

Mar 2013 – Jun 2014 **Writing Consultant,** Writing Center; Michigan State University
Advised undergraduate and graduate students on their research papers, essays, class projects and resumes.

Awards & Honors

2014	Teaching Certificate (U.S.)
2012	Teaching Certificate (China)
2011	Advanced Interpreter Certification
2010	Innovative Undergraduate Research Fellowship at Shanghai Normal University
2009	Shanghai Normal University Scholarship (Top 8%)

Services

2023	Reviewer	International Society of Learning Sciences (ISLS)
2023	Reviewer	ACM Computer-Human Interaction (CHI)
2023	Reviewer	ACM Interaction Design for Children (IDC)
2023	Reviewer	FabLearn/Constructionism
2023	Reviewer	American Education Research Association (AERA)
2022	Reviewer	American Education Research Association (AERA)
2020	Reviewer	Learning Sciences Graduate Student Conference (LSGSC)
2019	Reviewer	Learning Sciences Graduate Student Conference (LSGSC)

2019	Subreviewer	ACM Computer-Human Interaction in Play (CHI PLAY)
2022	Volunteer	Association of Science-Technology Centers (ASTC)
2023	Volunteer	Play Make Learn