

Zhenyao Cai

zhenyaoc@uci.edu | PhD student in Education with a focus on AI in Education

Research Interest

Human-Computer Interaction, Educational Technology, AR/VR, Artificial Intelligence Education for K-12, Crowdsourcing, Physical Computing

Education

University of California, Irvine

2022-2027 (Expected)

Ph.D. student, Educational Technology

Advisors: Dr. Shayan Doroudi, Dr. Kylie Peppler

Teachers College, Columbia University

2020-2022

M.A. Instructional Technology and Media

Advisors: Dr. Yoo Kyung Chang, Dr. Nathan Holbert

Smith College

2015-2019

B.A. Computer Science and Art History

Advisors: Dr. Joseph O'Rourke

Publication

Book/Book Chapters

- B1 **Zhenyao Cai**; Half Wet Half Dry 一半湿一半干; Zhejiang Juvenile and Children's Publishing House
浙江少年儿童出版社; Hangzhou, Zhejiang; 2015

Peer-Reviewed Conference Papers

- P1 Wen-Sung Chen, Jessica Keast, Jordan Moody, Corinne Moriarty, Felicia Villalobos, Virtue Winter, Xueqi Zhang, Xuanqi Lyue, Elizabeth Freeman, Jessie Wang, **Zhenyao Cai**, Katherine M. Kinnaird. "Data Usage in MIR:History & Future Recommendations." In Proceedings of the International Society for Music Information Retrieval , pp. 25-32. 2019. (**ISMIR 2019**)

Workshop, Symposia, Poster, and Extended Abstracts

- A1 **Zhenyao Cai**, Shiyao Wei. "Examining Learners' Cognitive Engagement in Danmaku Comments." In Proceedings of the International Conference on Computer-Supported Collaborative Learning." pp 579-580. 2022 (**CSCL'2022 Poster**)

In Submission

- A1 Xiaofei Zhou, Yushan Zhou, **Zhenyao Cai**, Anni Qiu, Qinqin Xiao, Zhen Bai. "BeeTrap: AR-Based Embodiment to Teach K-12 Students AI literacy about Recommendation Systems"

Research Experiences

Understanding How Citizen Scientists Can Contribute to Authentic Research

Sept 2022-Present

Advisor: Dr. Shayan Doroudi, School of Education, University of California Irvine

- Conducted literature research in citizen scientists, crowdsourcing, science communication.
- Designed the overall research protocol and interview protocols with researchers and novices.

A.I. Story: Understanding the interaction between Children and AI systems Sept 2022-Present

Advisor: Dr. Kylie Peppler, School of Education & School of Informatics, University of California Irvine

- Conducted literature research in AI-powered generators, Child-AI interaction, AI literacy.
- Designed co-design protocol.

XR4ML: Accessible Extended-Reality for Teaching Machine Learning March 2022-Present

Advisor: Zhen Bai, Computer Science, University of Rochester

- Conducted co-design research with 7 Machine Learning Experts.
- Designed and created the AR application BeeTrap to support Embodiment to Teach K-12 Students AI literacy about Recommendation Systems.

Examining Learners' Cognitive Presence in an Emerging Commenting System Sept 2021-May 2022

Advisor: Dr. Nathan Holbert, Snowday Learning Lab, Teachers College Columbia University

- Gathered large-scale log data from online UGC platforms.
- Developed coding schemes and used quantitative analysis methods to evaluate users' cognitive engagements using log data.

Investigating Project-based Learning in Public School Classrooms in China Sept-December 2020

Advisor: Dr. Mingjie Lv, Research Institute of Interdisciplinary Innovation, Zhejiang Lab

- Gathered large-scale discussion comments from UGC platforms.
- Developed coding schemes and used quantitative analysis methods to evaluate users' cognitive engagements.

Quantitative Assessment of College Learning Spaces

Understanding the Potential of Voice-controlled Games as Tools for Speech Therapy June-Oct 2018

Advisor: Dr. Jordan Crouser, Computer Science, Smith College

- Mined, analyzed and visualized a large-scale dataset of Smith College classrooms with Python.
- Developed report for implications to improve classroom usage efficiency.
- Developed Python voice-controlled games for children's self-management of voice volume.

Work Experiences

UX designer Intern, Barry Joseph Consulting, NYC Sept 2021-Feb 2022

Advisor: Barry Joseph

- Developed discussion guide for conducting focus group discussions with 6 K-12 science educators.
- Drafted proposals for building a science educator community and submitted to the Natural History Museum of Utah.

Product Designer, Teletraan Inc., Hangzhou China Sept. 2019 June 2020

- Led design of an end-to-end visitor management system and an industrial management solution in a team of 15+ people, including UI designers, project manager, software engineers and test engineers. Led the team to iterate product with user feedback in an agile development environment.
- Conducted user research sessions with 10+ stakeholders including company employees, administrators, company visitors, and technicians.
- Final products were delivered to industrial companies and organizations such as GSMA.

Product Designer Intern, Teletraan Inc., Hangzhou China

July. 2019 - Sept 2019

- Assisted the product designer to iterate functions of an e-commerce educational application on AliPay.
- Conducted competitor analysis, analyzed qualitative data collected from inter-views with 6 AntAdventure users, identified redesign opportunities, and prototyped the gamification version of the educational application.

Honors and Awards

Student Undergraduate Research Fellowship, Smith College

2018

Talks

- T2 Poster Presentation, "Examining Learners' Cognitive Engagement in Danmaku Comments.", **ISLS 2022**
- T1 Poster presentation, "Smith College Learning Space Assessment", Amherst College **StatFest 2018**

Projects

EmotionBlock: A Tangible Toolkit for Social-Emotional Learning through Storytelling

Feb-May 2022

Advisor: Dr. Paulo Blikstein, Teachers College, Columbia University

- Designed and prototyped a physical block-like toolkits to support SEL through storytelling for PreK children.
- Tested the toolkit with 5 children and analyzed verbal and non-verbal behaviors.

DreamToy: Co-design Dream Toy House with Children

Feb-May 2022

Advisor: Dr. Paulo Blikstein, Teachers College, Columbia University

- Conducted a co-design session with a child on her dream toy.
- Prototyped and built the toy using fabrication tools and electronics.

Protackt: A Board Game for Learning Data Privacy

Feb-May 2022

Advisor: Dr. Paulo Blikstein, Teachers College, Columbia University

- Designed, prototyped and built a card game to support teaching adolescents online data privacy.

ParentThesis: a Pairing app that Matches Children with Parent Tutors

Sept-Dec 2021

Advisor: Nathan Holbert, Teachers College, Columbia University

- Collected 300+ surveys from k-12 parents and analyzed data for design implications.
- Design proposal was accepted to the second phase in Tools Competition' 2021.

Technical Skills

Programming Languages: Python, Java, JS, html, css, R

Design toolkits: Adobe Photoshop, Adobe Illustrator, Adobe Indesign, Sketch, Figma, Sketchup

Research method: Statistical Analysis, Data Wrangling, Participatory Design, Usability Testing

Selected Courses

Computer Science: Data Structures, Discrete Geometry, Advanced Programming, Algorithms, Image Processing, Computer Graphics, Machine Learning, Intelligent User Interfaces Interactive Media, Human-Computer Interaction

Learning Science: Intro to Learning Sciences, Intro to Instructional Design, Educational Data Mining, Constructivist Toys and Tools, Human Development

Research Method: Statistics in Social Science

Reference

Dr. Shayan Doroudi, Assistant Professor, UCI School of Education, doroudis@uci.edu

Dr. Zhen Bai, Assistant Professor, University of Rochester School of Computer Science, zbai7@ur.rochester.edu

Dr. Nathan Holbert, Associate Professor, Teachers College, Columbia University, holbert@tc.columbia.edu