Hongfei Ji

Email: jihongfei1998@gmail.com
Portfolio Website: http://www.hongfeiji.com

My research focuses on designing publicly accessible and intuitive human-AI communication systems to explore their value and impact on embodied cognition, learning, and social interactions in everyday life, both for individuals and in specific communities.

Education

2024 - **Georgia Institute of Technology** | Atlanta, GA
M.S. in Computer Science (Part-time, Online)
Specialization: Interactive Intelligence

2022 - 2024 **Carnegie Mellon University** | Pittsburgh, PA
M.S. in Computational Design
DISSERTATION: Just an error? - Prototyping embodied experiences of LLM hallucinations
Committee: Daragh Byrne, Sinan Goral

2016 - 2022 **Tongji University** | Shanghai, China
B.Arch, Minor in German, French
Thesis Project: Rule-Driven Algorithmic Cities - A Study of the Metaverse Space Framework

Research Experience

2024.01- **Graduate Research Associate**
hyperSENSE: Embodied Computations Lab
Carnegie Mellon University, School of Design
Advisor: Dina El-Zanfaly
Mentee: Cami Streuly

Work 1: XR + AI in ceramic teaching/learning
- Conducted a systematic literature review on embodied interaction, craft in HCI and XR + AI.

- Designed and implemented a real-time instructional system for teaching wheel throwing in ceramic making, integrating multimodal 3D learning (voice commands, video, and gestures), CV-based shape comparison/improvisation, and rule-based/LLM-enhanced multimodal feedback, to provide a contextual embodied learning experience.
- Designed contextual interview protocols and surveys for both qualitative and quantitative analysis.
- Built connections with the ceramics community in Pittsburgh and conducted 20+ user studies that included ethnographic observations and prototyping sessions with instructors, experienced learners, and novice learners.
- First-authored a poster titled "MRClay: An MR+AI System for Embodied Craft Learning," presented at XRTC Symposium, Carnegie Mellon University.
- First-authored a paper titled "Reshaping Embodied Craft Learning with MR-AI: Insights from Designing Wheel-Throwing Guiding System," under review for DIS 2025.

Work 2: XR Welding
- Supported research activities, including conducting user studies, setting up welding workstations, and implementing real-time data transfer scripts.

2024.07- **Graduate Research Assistant**
ai{DEAL} Studio
Southern University of Science and Technology, School of Design
Advisor: Pengcheng An

- Developed an educational game to foster empathy for somatization by integrating real-world bio-feedback with an LLM-augmented personalized avatar.
- Conducted a systematic literature review on persuasive design and embodiment and proposed design fictions for wearable bio-feedback sensor systems.

Manuscripts & Presentations

Manuscripts

2025 Hongfei Ji, Peiyu Hu, Dina Dina El-Zanfaly, "Reshaping Embodied Craft Learning with MR-AI: Insights from Designing Wheel-Throwing Guiding System", *Under review for Proceedings of the 2025 ACM Designing Interactive Systems Conference.* [Manuscript Link]

2024

Hongfei Ji, Sinan Goral, Daragh Byrne. "Just an error? - Prototyping embodied experiences of LLM hallucinations". [Manuscript Link]

Presentations

2024 Hongfei Ji, Dina Dina El-Zanfaly. "XRClay: An XR+AI System for Embodied Craft Learning". *Extended Reality Technology Center Symposium, Carnegie Mellon University, 2024* [Poster Link]

2024 Hongfei Ji, Sinan Goral, Daragh Byrne. "Just an error? - Prototyping embodied experiences of LLM hallucinations". *Submitted to Proceedings of the 16th Conference on Creativity&Cognition. 2024 (Volunteer Poster Presentation)* [Poster Link]

Professional Service

Student Volunteer

2024 ACM Creativity & Cognition 2024 (C&C)

Grants, honours & awards

2024 **MSCD Research Support Fund ($1000)**, School of Architecture, CMU

2023 **MSCD Research Support Fund ($800)**, School of Architecture, CMU

2022 **Feng Chi-chun Scholarship**, Tongji University

2018 **China National Scholarship**

Relevant Coursework

2025 **CS 6795: Introduction to Cognitive Science** Prof. Keith McGreggor, Prof. Ashok Goel, GT

2024 **CS-7637: Knowledge-Based AI** Prof. David A. Joyner, GT

2024 **15-494: Cognitive Robotics** Prof. David S. Touretzky, CMU

2023 **10-601: Machine Learning** Prof. Henry Chai, CMU

2023 **17-514: Principles of Software Construction** Prof.Jonathan Aldrich, Prof.Bogdan Vasilescu, CMU

2023 **48-734: Possibilistic Design** Sinan Goral, CMU

2023 **48-758: Responsive Mobile Environments** Prof. Daragh Byrne, CMU

2023 **05-610: User-Centered Research and Evaluation** Prof. Raelin Musuraca, Prof. Motahhare Eslami, CMU

2022 **05-685: Prototyping Algorithm Experience** Prof. Ken Holstein, CMU

Skills

Programming: C, C#, Javascript/Typescript, Java, Python
Design/Modeling Tools: Figma, Adobe Creative Cloud, Rhino/AutoCAD, QGIS, Unity, Blender
Design Knowledge: Design Thinking & Research, User Research and Evaluation (Usability Test, Contextual Interview, Survey), Prototyping (Physical/Wireframe/Piggyback Prototyping)
Programming Knowledge: Data visualization, XR Development, Web Application Development, Computer System/Network, Cloud Computing, Machine learning/Prompt Engineering, Physical Computing (Arduino, Raspberry Pi)
Language: Mandarin (native), English (fluent), German (intermediate), French (elementary)

References

Dr. Daragh Byrne, Associate Teaching Professor
School of Architecture, Carnegie Mellon University
Courtesy appointments in the School of Design and the Human Computer Interaction Institute
daraghb@andrew.cmu.edu

Dr. Dina El-Zanfaly, Assistant Professor
School of Design, Carnegie Mellon University
delzanfa@andrew.cmu.edu

Sinan Goral, Adjunct Faculty Instructor
Human-Computer Interaction Institute, School of Architecture, Carnegie Mellon University
sgoral@andrew.cmu.edu