

Emily Fang

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Education

North Carolina State University, Raleigh, NC	<i>Aug 2024 - Present</i>
Ph.D in Industrial Engineering (GPA: 4.00)	
<i>Human Factors Engineering, Human-Computer Interaction</i>	<i>Aug 2019 - May 2024</i>
B.S in Industrial Engineering (GPA: 3.77)	
<i>Minor in Supply Chain Management</i>	

Experience

North Carolina State University - Graduate Research Assistant	<i>May 2024 - Present</i>
AI-Assisted Augmented Reality Checklists for Occupational Hazard Recognition and Mitigation	<i>Aug 2025 - Present</i>
• Developed and built an augmented reality prototype in Unity (C#), deploying to Meta Quest 3 using the passthrough camera API to overlay hazard-mitigation checklists in the user's real environment.	
• Integrated OpenAI GPT-4o via API with a gesture-driven Unity UI, sending Meta Quest 3 passthrough camera snapshots to generate context-specific hazard-mitigation checklists and parsing structured JSON into interactive canvas elements.	
Short-Term Cognitive Effects of Different Video Game Tasks	<i>May 2024 - Present</i>
• Administered 2-hour in-lab experimental protocols with adult participants, conducting standardized cognitive assessments to measure selective attention, inhibitory control, working memory, and multitasking abilities pre- and post-intervention.	
• Facilitated computer-based tasks, conducted semi-structured interviews, and collected behavioral performance, eye-tracking, and survey data (Qualtrics, PANAS, NASA-TLX) for quantitative and qualitative analysis.	
Scale Cognition Advanced Learning Environments in Virtual Reality (SCALE-VR)	<i>Aug 2023 - Jul 2025</i>
• Collaborated with interdisciplinary teams across education, design, and engineering to assist in the iterative development of a NSF-funded VR application (Award #2055680) designed to teach students concepts of scale and numeracy.	
• Conducted qualitative analysis on formative evaluation data through qualitative coding and Thematic Analysis, identifying insights to enhance usability and user experience.	
• Assisted in outreach initiatives at the NC Science Museum and a local underserved middle school, engaging students in educational activities and promoting interest in science and technology.	
North Carolina State University - Undergraduate Research Assistant	<i>Aug 2021 - May 2024</i>
Augmented Reality for Engineering Education Enhancement (AREEA)	<i>Oct 2022 - May 2024</i>
• Collaborated with a Ph.D. researcher to conduct a mixed-methods evaluation of a game-based augmented reality application aimed at teaching statistics, engaging directly with participants to collect both qualitative and quantitative data.	
• Facilitated data collection by administering validated questionnaires, conducting interviews, and guiding participants through evaluation tasks. Conducted qualitative and quantitative analysis to generate insights on usability and UX.	
Virtual Instructor Application 2 (VIA 2)	<i>Aug 2021 - Oct 2022</i>
• Assisted a Ph.D. researcher to iteratively improve an augmented reality-based postural training tool for occupational safety, applying both qualitative and quantitative research methods to evaluate and refine usability and effectiveness.	
• Utilized various research methodologies, including PSSUQ (Post-Study System Usability Questionnaire), Bipolar Laddering, and Semi-Structured Interviews to deliver actionable insights on tool usability and training outcomes.	

Publications

- Perera, G. N., **Fang, E.**, Bottomley, L., Chen, K. B., & Ivy, J. (2025). Study Design and Assessment Framework for Testing Augmented Reality Tools in Engineering Education. *2025 ASEE Annual Conference & Exposition*. <https://peer.asee.org/57157>
 - **Fang, E.**, Kulasingam, R., Cheng, F., Peterson, M., Delgado, C., & Chen, K. B. (2025). Examining User Interactions With Signaling Elements in a Virtual Reality Learning Application. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*, 0(0). <https://doi.org/10.1177/10711813251360711>
 - Cheng, F., **Fang, E.**, & Chen, K. B. (2025). Mental Models of Gestural Interaction for Information Processing in Virtual Reality. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*, 0(0). <https://doi.org/10.1177/10711813251357931>
 - **Fang, E.**, Sivaramakrishnan, A., & Chen, K. B. (2024). Negative Emotions From Virtual Reality Usage: A Preliminary Exploratory Study Using Online Forums. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*, 0(0). <https://doi.org/10.1177/10711813241275079>
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Achievements

- National Institute of Occupational Safety and Health Graduate Fellowship at NC State University, 2025 - Present
 - Provost's Doctoral Fellowship at NC State University, 2024 - 2025
 - Graduate Merit Award at NC State University, 2024 - 2025
 - Institute of Industrial and Systems Engineers Applied Ergonomics Conference Student of the Year Award, 2023
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Skills

- JavaScript, Python, C#, R Studio, Tableau, Qualtrics, Dedoose, NVivo, Figma, Unity3D
- Continuous Improvement, Experimental Design, Mixed Methods, Qualitative and Quantitative Analysis, Root Cause Analysis, Study Coordination, Technical Writing, Thematic Analysis, Usability Analysis, User-Centered Design
- English: Native or Bilingual proficiency; Mandarin: Native or Bilingual proficiency