Samaneh **Zamanifard, Ph.D.**

Postdoctoral Research Associate | U.S. Permanent Resident

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Research Profile

My research investigates how AI systems can strengthen human reasoning and independent learning. I examine both how learners engage with AI-generated explanations and how large language models organize and transfer reasoning strategies. Combining human-centered experiments, learner modeling, eye tracking, and analysis of model representations, I aim to develop reasoning-aware AI tutors that adapt instructional guidance to learners' evolving understanding. My earlier work in immersive HCI and social VR provides a foundation for evaluating human-AI interaction.

Academic Appointments

Postdoctoral Research Associate — Aug. 2026 – Present
AI4STEM Education Center, University of Georgia — Athens, GA

- Lead the design and integration of AI-supported STEM learning environments, translating teacher and student needs into interaction requirements, development priorities, and human-centered evaluation workflows for GENIUS and EngageAgent.
- Developed a multi-agent framework to coordinate team contributions and give project leaders visibility into workflows and project status. Integrated code review and merge decisions with feedback, alerts for instructions conflicting with verified project components, and human oversight of development, testing, and task generation.
- Mentor undergraduate and graduate students, including undergraduate researchers in UGA's Vertically Integrated Projects for Research (VIPR) program, providing research guidance and technical feedback.

Education

Ph.D. in Human-Centered Computing — Jan. 2019 - May 2026
Clemson University — Clemson, SC

Dissertation: *Personalizing Education with Large Language Models: Learner Characteristics, Style Inference, and Adaptive Engagement*

Advisor: Andrew Robb

Master of Science in Computer Engineering - Software — Oct. 2011 - Jan. 2014
Islamic Azad University — Tehran, Iran

- Thesis Title: An Incremental Approach to Manage Variability in Software Product Line Requirements

Bachelor of Science in Computer Engineering - Software — Feb. 2004 - Aug. 2006
Islamic Azad University — Tehran, Iran

Honors & Fellowships

Meta (Facebook) Research PhD Fellowship (Link to Meta**)** — 2020–2022
Meta Research

- $42,000/year stipend plus university tuition for two years.
- Recognized for outstanding, innovative research among 1,876 applicants from over 100 accredited universities worldwide.

Best Paper Award Finalist — 2026
Decision Sciences Institute (DSI) Annual Conference

Outstanding Review Recognition — 2026
ACM Symposium on User Interface Software and Technology (UIST)

- Received special recognition for an outstanding review at UIST 2026; rated as highly useful.

Graduate Writing Across the Curriculum (Grad WAC) Fellow — 2020–2022
Pearce Center for Professional Communication, Clemson University

- Participated as a Grad WAC Fellow in the 2020–2021 and 2021–2022 academic years.
- Completed professional development in writing pedagogy, writing-in-the-disciplines, and strategies for teaching and assessing undergraduate writing.

Competitive Travel Stipend – FABRIC KNIT10 — 2025
FABRIC Research Infrastructure

Competitive Travel Grant – FABRIC KNIT9 & MERIF — 2024
FABRIC Research Infrastructure

Publications

Peer-reviewed journal articles and conference papers

P1 **Zamanifard, S.**, Goudarzi, S., Soleimani, M., & Robb, A. (2026). Perceptions of large language models among predominantly STEM undergraduate students in higher education. *Discover Education*. Advance online publication. [DOI]

P2 Vankit, S. A., Genaro Motti, V., Do, T. D., **Zamanifard, S.**, Diaz, D., Duchowski, A. T., Knijnenburg, B. P., & Volonte, M. (2025). Path Modeling of Visual Attention, User Perceptions, and Behavior Change Intentions in Conversations With Embodied Agents in VR. *Computer Animation and Virtual Worlds, 36*(3), e70028. [DOI]

P3 Vankit, S. A., **Zamanifard, S.**, Diaz, D., Mousas, C., Richardson, K., Duchowski, A. T., & Volonte, M. (2025). Exploring the Impact of Multimodal Long Conversations in VR on Attitudes Toward Behavior Change, Memory Retention, and Cognitive Load. *Computer Animation and Virtual Worlds, 36*(3), e70023. [DOI]

P4 Diaz, D., **Zamanifard, S.**, Volonte, M., & Duchowski, A. T. (2025). Evaluating Demographic Bias of Virtual Humans With Gaze: Race and Sex Concordance. *Proceedings of the ACM on Human-Computer Interaction, 9*(3), 1–17. *ETRA full paper.* [DOI]

P5 Schulenberg, K., Li, L., Freeman, G., **Zamanifard, S.**, & McNeese, N. J. (2023). Towards Leveraging AI-based Moderation to Address Emergent Harassment in Social Virtual Reality. In *Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems* (CHI '23), Article 514, 1–17. [DOI]

P6 **Zamanifard, S.**, & Freeman, G. (2023). A Surprise Birthday Party in VR: Leveraging Social Virtual Reality to Maintain Existing Close Ties over Distance. In *Information for a Better World: Normality, Virtuality, Physicality, Inclusivity* (iConference 2023), LNCS 13972, 268–285. Springer. [DOI]

P7 Freeman, G., **Zamanifard, S.**, Maloney, D., & Acena, D. (2022). Disturbing the Peace: Experiencing and Mitigating Emerging Harassment in Social Virtual Reality. *Proceedings of the ACM on Human-Computer Interaction, 6*(CSCW1), Article 85, 1–30. [DOI]

P8 Maloney, D., **Zamanifard, S.**, & Freeman, G. (2020). Anonymity vs. Familiarity: Self-Disclosure and Privacy in Social Virtual Reality. In *Proceedings of the 26th ACM Symposium on Virtual Reality Software and Technology* (VRST '20), Article 25, 1–9. *Maloney and Zamanifard contributed equally.* [DOI]

P9 Alizadeh, A., Chehrehpak, M., Nasr, A. K., & **Zamanifard, S.** (2020). An empirical study on effective factors on adoption of cloud computing in electronic banking: a case study of Iran banking sector. *International Journal of Business Information Systems, 33*(3), 408–428. [DOI]

P10 **Zamanifard, S.**, Khosravi, R., & Sabouri, H. (2015). An Incremental Approach to Manage Variability in Software Product Line Requirements. *International Journal of Computer and Electrical Engineering, 7*(1), 47–69. [DOI]

Short papers, extended abstracts, posters, and workshop contributions

S1 Duchowski, A. T., **Zamanifard, S.**, Cecchetti, S., Cavallo, M., & Edmonds, A. (2027). Re-streamed Validation of Real-Time Cognitive Load Measurement. In *Pattern Recognition. ICPR 2026 International Workshops, Part II*, LNCS 17111, 557–571. Springer. *Workshop paper (ETTAC); published online 2026.* [DOI]

S2 Diaz, D., **Zamanifard, S.**, Volonte, M., & Duchowski, A. T. (2025). Toward Standardization of Colliders for Statistical Comparison of Gaze on Virtual Humans. In *Proceedings of the 2025 Symposium on Eye Tracking Research and Applications* (ETRA '25), Article 102, 1–5. *Workshop paper (Eyes4Access).* [DOI]

S3 Diaz, D., **Zamanifard, S.**, Duchowski, A. T., & Volonte, M. (2024). Initial Investigations into Information Retention and Perception on Virtual Human Race. In *2024 IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops* (VRW), 1078–1079. *Poster.* [DOI]

S4 **Zamanifard, S.**, & Robb, A. (2023). Social Virtual Reality Is My Therapist: Overcoming Social Anxiety Disorder Through Using Social Virtual Reality. In *Extended Abstracts of the 2023 CHI Conference on Human Factors in Computing Systems* (CHI EA '23), Article 252, 1–6. *Extended abstract.* [DOI]

S5 Freeman, G., **Zamanifard, S.**, Maloney, D., & Adkins, A. (2020). My Body, My Avatar: How People Perceive Their Avatars in Social Virtual Reality. In *Extended Abstracts of the 2020 CHI Conference on Human Factors in Computing Systems* (CHI EA '20), Article LBW250, 1–8. *Late-Breaking Work.* [DOI]

S6 **Zamanifard, S.**, & Freeman, G. (2019). "The Togetherness that We Crave": Experiencing Social VR in Long Distance Relationships. In *Conference Companion Publication of the 2019 on Computer Supported Cooperative Work and Social Computing* (CSCW '19 Companion), 438–442. *Poster abstract.* [DOI]

Preprints and manuscripts under review

M1 **Zamanifard, S.**,Goudarzi, S.,& Robb, A. (2026). Bias and Reliability in Learning-Style Inference from Student–AI Dialogues: An Evaluation of GPT-4o and Gemini 2.0 Flash. *Manuscript under review; preprint available.* arXiv:2610.27448

M2 Goudarzi, S., **Zamanifard, S.**, Haeri, S. A. S., Nasiri, M., & Rahimian, H. (2026). Mathematical Transfer in LLMs Follows Reasoning Approach More Than Topic. *Manuscript under review; preprint available.* arXiv:2610.00331.

M3 Goudarzi, S., **Zamanifard, S.**, Nasiri, M., & Rahimian, H. (2026). Math Reasoning in LLMs is Organized by Approach, Not Topic. *Preprint.* arXiv:2609.27041.

M4 Goudarzi, S., & **Zamanifard, S.** (2025). Beyond Play and Pause: Turning GPT-4o Spatial Weakness into a Strength for In-Depth Interactive Video Learning. *Preprint.* arXiv:2508.17160.

Selected Research Projects

Research Co-Lead — LLM Reasoning and Mathematical Transfer May 2025 – Present
Independent Research Collaboration

- Investigated how LLMs organize mathematical reasoning using generation-replay and activation-based analysis of 30,400 solutions across eight open-weight models.
- Found that internal activation patterns clustered by reasoning approach rather than mathematical topic, revealing distinctions not captured by generated reasoning text.
- Evaluated reasoning transfer through controlled fine-tuning experiments, showing that approach-matched training outperformed topic-matched training across 40 experimental comparisons.

Lead Researcher in LLM-Powered Personalized Learning Nov. 2024 - Present
Clemson University Clemson, SC

- Developed **Tiger AI**, a system integrating GPT-4o, LLaMA 3, and Gemini 2 Pro for interactive research on learning experiments. (Link to TigerAI)
- Built a dashboard for configuring surveys and designing LLM-driven learning experiments.
- Led a study with 1317 students, showing LLMs performed poorly in zero-shot for learning style prediction but improved with few-shot and fine-tuning.

LLM Personalization: Visual Attention and Pupil Dynamics May. 2025 - Apr. 2026
Clemson University Clemson, SC

- Designed and evaluated a within-subject study comparing profile-conditioned and generic LLM explanations using eye tracking and pupillometry.
- Analyzed gaze behavior and pupil dynamics to examine how personalization influences visual attention and physiological processing demand.
- Found changes in gaze organization without increased explanation-viewing time, providing process-level evidence of differences in how learners engage with personalized explanations.

Lead Researcher in LLM Adoption in Higher Education Jan. 2024 - Nov. 2024
Clemson University Clemson, SC

- Led a study of undergraduate perceptions of LLMs, with an analyzed sample of 900 students.
- Used factor analyses and structural equation modeling to examine associations between student characteristics, LLM use, and perceived benefits and reliance.
- Found perceived benefits for comprehension and coursework, with comparatively limited reported reliance on LLMs for academic success.

Researcher in AI-Driven Interactive Video Learning Oct. 2024 - Present
Untwist Clemson, SC

- Developed **Untwist**, an AI-powered system integrating GPT-4o and Computer Vision to enable real-time interactive video learning.
- Designed a novel framework allowing users to engage with videos dynamically by selecting regions and receiving context-aware AI responses.
- Implemented a video processing pipeline using annotated frames, improving LLMs' spatial reasoning and accuracy in interpreting video content.
- Demonstrated Untwist's feasibility for education and corporate training, addressing limitations of passive video-based learning.

Researcher in Human Interaction and Attention in Immersive Environments Jul. 2023 – May 2025
Clemson University Clemson, SC

- Developed a VR-based educational platform and integrated eye-tracking and Empatica E4 sensing to examine student engagement, visual attention, and physiological responses.
- Investigated how virtual-human characteristics, including gender and race, relate to gaze behavior and potential attentional biases in immersive environments.

Teaching Experience

Graduate Teaching Assistant – Human–Computer Interaction 2022, 2025
CPSC 4140/6140, Clemson University Clemson, SC

- Supported four offerings (Fall 2022; Spring, Summer, and Fall 2025): taught Figma, assisted with prototyping, guided usability-problem identification, reviewed reports, graded student work, and held office hours.

Lab Instructor / Graduate Teaching Assistant – Applied Data Science 2023–2024
CPSC 4300/6300, Clemson University Clemson, SC

- Supported three offerings (Spring and Fall 2023; Spring 2024): taught Python and laboratory material, designed and administered quizzes, graded assignments, managed Canvas, and held office hours.

Graduate Teaching Assistant – Additional CS and HCC Courses 2019–2024
Clemson University Clemson, SC

- Core CS: Intro Programming in Java (CPSC 1061), Discrete Structures (2070), Software Development Foundations (2150), Computer Organization (2310), Operating Systems (3220), and Database Management Systems (4620).
- Upper-level/graduate: Usable Privacy and Security (CPSC 4180/6180), System Administration and Security (4240/6240), Game Design (4820/6820), and Computer and Online Relationships (HCC 8510).
- Taught programming labs where assigned; provided technical support, graded assignments and presentations, and held student office hours.

Selected Academic Presentations

Guest Lectures

Apr. 9, 2025 *Eye Tracking Experiments.* CPSC 8810, Clemson University.
Feb. 7, 2025 *Eye Tracking Experiments in AR.* CPSC 8810, Clemson University.

Conference Presentations

2023 **ACM CHI** (Extended Abstract): *Social Virtual Reality Is My Therapist: Overcoming Social Anxiety Disorder Through Using Social Virtual Reality.*
2023 **iConference**: *A Surprise Birthday Party in VR: Leveraging Social Virtual Reality to Maintain Existing Close Ties over Distance.*
2020 **ACM VRST**: *Anonymity vs. Familiarity: Self-Disclosure and Privacy in Social Virtual Reality.*
2019 **ACM CSCW** (Poster): *The Togetherness that We Crave: Experiencing Social VR in Long Distance Relationships.*

Professional Service

Conference Peer Reviewing 2023–2026

- **ACM CHI**: 2023–2024 (3 reviews)
- **ACM UIST**: 2026 (1 review; outstanding review recognition)
- **IEEE VR**: 2026 (1 review)

Journal Peer Reviewing 2025–2026

- **ACM Transactions on Computing for Healthcare**: 2025–2026 (2 reviews)
- **Computers in Human Behavior**: 2025 (1 review)

Service & Leadership

President Jun. 2020 - Jun. 2022

Clemson Iranian Students Organization (CISO) Clemson, SC

- Led a graduate-student organization focused on supporting incoming students and sharing Iranian culture through community events.

Industry Experience

Product Owner Jun. 2016 - Dec. 2018

Appson Co

- Led cross-functional UI/UX, development, and QA teams.
- Translated user insights into product backlogs and release priorities for a football prediction application and a service catalog.
- Facilitated agile development and release cycles, serving as the primary advocate for the user's perspective throughout the process.

Senior System Analyst Apr. 2014 - Jun. 2016

Hasin Co

- Conducted stakeholder interviews and developed requirements, user stories, and use-case scenarios for Ubiprocess BPMS, Myket App Store, and a banking loan system

Senior System Analyst Jul. 2011 - Mar. 2014

Soroush High Tech Co

- Conducted competitive analysis and developed use-case scenarios and interface prototypes to guide IPTV feature design and customization.

System Analyst Nov. 2006 - Jun. 2011

Fanap Insurance System

- Conducted stakeholder interviews and ethnographic studies across two insurance companies.
- Developed use-case scenarios and interface prototypes for a reusable insurance platform.

Skills

LLM & Machine Learning Research	PyTorch, Fine-Tuning, Representation Analysis, Activation Analysis, Generation-Replay
Human-Centered AI	Human–AI Interaction, Learner Modeling, Adaptive Learning Systems, Usability Testing
Quantitative Research	Experimental Design, Factor Analysis, Structural Equation Modeling, Eye Tracking, Pupillometry
Qualitative Research	User Interviews, Digital Ethnography, Thematic Analysis
Programming & Data Analysis	Python, R, C/C++, C#, Java, Pandas, NumPy, Matplotlib
Research & Development Tools	Figma, Qualtrics, Unity, Blender, MRTK, VIVE Eye and Facial Tracking SDK