

Amirpouya Ghasemaghahi

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Research Focus

Computer Science Ph.D. candidate and graduate researcher at the University of Central Florida studying human decision-making and human-AI interaction, with a focus on LLM-powered conversational agents and immersive systems. My research examines how communication medium, embodiment, and AI-mediated interaction influence judgment, trust, perceived credibility, bias, and confidence, and develops and evaluates conversational and XR systems through empirical human-subject studies.

Education

University of Central Florida, Ph.D. in Computer Science Aug. 2022 – Present
GPA: 3.67/4.00 | Advisor: Dr. Joseph J. LaViola Jr.

University of Central Florida, M.S. in Computer Science Aug. 2022 – Aug. 2025
GPA: 3.70/4.00

Technical Skills

Programming: Python, C#, Java, C++ , SQL
Machine Learning: PyTorch, NumPy, Pandas, scikit-learn, transformer models, multimodal model evaluation, data preprocessing
Conversational AI: LLM-backed agents, prompt engineering, retrieval-augmented generation, automatic speech recognition, text-to-speech generation
XR Development: Unity, Unreal Engine, VR/AR head-mounted displays, avatar systems, motion tracking, immersive interaction design
Localization / SLAM: LiDAR, 2D SLAM, scan matching, ICP, odometry, pose estimation, multimodal sensor fusion
Research Methods: Human-subject study design, survey design, behavioral data collection, quantitative analysis, qualitative analysis, IRB-related preparation
Tools / Platforms: Git, Linux, SLURM, Jupyter, Blender, SPSS, Overleaf, LaTeX

Graduate Research Assistantships

Interactive Systems and User Experience Lab Aug. 2022 – Present
Graduate Research Assistant, University of Central Florida

- Conduct research in human-computer interaction, human-centered AI, virtual and augmented reality, conversational agents, multimodal interaction, and empirical human-subject evaluation.
- Design and evaluate LLM-powered conversational and immersive systems integrating automatic speech recognition, speech synthesis, retrieval-augmented generation, avatar animation, and Unity- and Unreal-based VR/AR environments.
- Design human-subject studies and IRB protocols; collect and analyze behavioral, interaction, quantitative, and qualitative data; and contribute to peer-reviewed publications.

Unknot.id, Inc. Sep. 2026 – Present
Graduate Research Assistant, University of Central Florida

- Conduct research on GPS-independent localization and tracking using multimodal sensor data, including LiDAR, Wi-Fi, inertial sensors, and visual data.
- Evaluate and improve localization methods using two-dimensional LiDAR data, with an emphasis on robust localization in environments where GPS may be unavailable or unreliable.

Teaching Experience

Graduate Teaching Assistant, CAP 3104: Foundations of Human-Computer Interaction

Spring 2026

University of Central Florida

- Supported instruction in user-centered design, interface evaluation, interaction design, assignments, project work, grading, and office hours.

Graduate Teaching Assistant, COP 3503: Computer Science II

Fall 2025

University of Central Florida

- Led two lab sections, delivered weekly lab instruction and live coding demonstrations, maintained and graded assignments, and provided debugging and office-hour support.

Graduate Teaching Grader, COT 4210: Discrete Structures II

Fall 2022; Spring 2023

University of Central Florida

- Graded coursework and examinations, held office hours, answered student questions, and provided support on discrete mathematics and theoretical computer science topics.

Publications

Evaluating Multilingual User Interfaces for AR+BIM Construction Training

2026

Venue: *ACM Symposium on Spatial User Interaction (SUI)*

Authors: Joseph T. Kider Jr., Maria Mollica Redmon, Joseph J. LaViola Jr., **Amirpouya Ghasemaghaei**, and Lori C. Walters

Summary: Evaluates multilingual AR+BIM interfaces for construction training. Spanish-speaking participants completed a multi-step electrical installation task using AR guidance in Spanish or English, enabling comparison of task performance, workload, usability, and language-related factors.

Continuous Hand Gesture Recognition: Benchmarks and Methods

2025

Venue: *Computer Vision and Image Understanding (CVIU)*

Authors: Marco Emporio, **Amirpouya Ghasemaghaei**, Joseph J. LaViola Jr., and Andrea Giachetti

Summary: Reviews benchmarks and methods for continuous hand gesture recognition, proposes a taxonomy for organizing evaluation, and identifies limitations in dataset coverage, evaluation protocols, real-time recognition, and reproducibility.

Mitigating Response Delays in Free-Form Conversations with LLM-Powered Intelligent Virtual Agents

2025

Venue: *ACM Conference on Conversational User Interfaces (CUI)*

Authors: Mykola Maslych, Mohammadreza Katebi, Christopher Lee, Yahya Hmaiti, **Amirpouya Ghasemaghaei**, Christian Pumarada, Janneese Palmer, Esteban Segarra Martinez, Marco Emporio, Warren Snipes, Ryan P. McMahan, and Joseph J. LaViola Jr.

Summary: Studies response-delay mitigation in free-form spoken interaction with LLM-powered virtual agents and evaluates design strategies intended to improve conversational responsiveness and the resulting user experience.

All Languages Matter: Evaluating LMMs on Culturally Diverse 100 Languages

2025

Venue: *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*

Authors: A. Vayani et al. (including **Amirpouya Ghasemaghaei**)

Summary: Introduces ALM-Bench, a benchmark for evaluating large multimodal models across 100 culturally diverse and low-resource languages, supporting systematic analysis of multilingual and multicultural model understanding.

- From Research to Practice: Survey and Taxonomy of Object Selection in Consumer VR Applications** 2024
Venue: *IEEE International Symposium on Mixed and Augmented Reality (ISMAR)*
Authors: Mykola Maslych, Difeng Yu, **Amirpouya Ghasemaghaei**, Yahya Hmaiti, Esteban Segarra Martinez, Dominic Simon, Eugene M. Taranta II, Joanna Bergstrom, and Joseph J. LaViola Jr.
Summary: Surveys object-selection techniques used in consumer VR applications, organizes them through a taxonomy, and compares deployed practice with methods emphasized in academic research to identify gaps between research and real-world use.
- Visual Perceptual Confidence: Exploring Discrepancies Between Self-Reported and Actual Distance Perception in Virtual Reality** 2024
Venue: *IEEE Transactions on Visualization and Computer Graphics (TVCG)*
Authors: Yahya Hmaiti, Mykola Maslych, **Amirpouya Ghasemaghaei**, Ryan K. Ghamandi, and Joseph J. LaViola Jr.
Summary: Examines the relationship between users' self-reported confidence and their actual accuracy when estimating distances in virtual reality, using blindwalking tasks to compare subjective judgments with objective performance.
- Towards Better Throwing: A Comparison of Performance and Preferences Across Point of Release Mechanics in Virtual Reality** 2024
Venue: *Graphics Interface (GI)*
Authors: **Amirpouya Ghasemaghaei**, Mykola Maslych, Yahya Hmaiti, Esteban Segarra Martinez, and Joseph J. LaViola Jr.
Summary: Compares manual and automatic point-of-release mechanics for VR throwing across multiple input configurations and object types in a controlled user study, providing design guidance based on both performance and participant preferences.
- Throwing in Virtual Reality: Performance and Preferences Across Input Device Configurations** 2024
Venue: *IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (IEEE VRW)*
Authors: **Amirpouya Ghasemaghaei**, Yahya Hmaiti, Mykola Maslych, Esteban Segarra Martinez, and Joseph J. LaViola Jr.
Summary: Presents a preliminary evaluation of five input configurations and multiple throwable objects for VR throwing, comparing performance and participant preferences and motivating the later full study of point-of-release mechanics.
- What and How Together: A Taxonomy on 30 Years of Collaborative Human-Centered XR Tasks** 2023
Venue: *IEEE International Symposium on Mixed and Augmented Reality (ISMAR)*
Authors: Ryan K. Ghamandi, Yahya Hmaiti, Tam T. Nguyen, **Amirpouya Ghasemaghaei**, Ravi Kiran Kattoju, Eugene M. Taranta II, and Joseph J. LaViola Jr.
Summary: Develops a taxonomy of collaborative human-centered XR tasks from three decades of literature, organizing task actions and properties to clarify design choices and support comparison across collaborative immersive systems.
- Preprints and Technical Writing**
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- Modernizing User Privacy Preference Measurement through GPPI: A GDPR-Aligned Privacy Preference Item Bank** 2026
Venue: *arXiv preprint*
Authors: Yahya Hmaiti, Mykola Maslych, **Amirpouya Ghasemaghaei**, Trung Cuong Dang, Corey Pittman, David Mohaisen, and Joseph J. LaViola Jr.
Summary: Develops a GDPR-grounded item bank for measuring privacy preferences by translating regulatory protections into user-facing statements and organizing the resulting items into a structured set of privacy themes for future measurement and validation.

Takeaways from Applying LLM Capabilities to Multiple Conversational Avatars in a VR Pilot Study 2024

Venue: *arXiv preprint*

Authors: Mykola Maslych, Christian Pumarada, **Amirpouya Ghasemaghaei**, and Joseph J. LaViola Jr.

Summary: Presents a locally deployed LLM-powered conversational-avatar system integrating automatic speech recognition, speech synthesis, lip synchronization, and response-status indicators, together with reference architectures for state-machine and retrieval-grounded conversational behavior.

One Pipeline to Curate Them All: Model- and Task-Agnostic Data Refinement Architecture 2025

Venue: *Medium technical article*

Authors: **Amirpouya Ghasemaghaei** and Yahya Hmaiti

Summary: Presents a reusable, model-agnostic data-refinement workflow for detecting, validating, correcting, filtering, and packaging machine-learning datasets, with practical emphasis on identifying label and format errors before downstream training and evaluation.

Mentorship

Graduate Research Mentor 2024 – 2025

F-L.E.A.R.N. Program, University of Central Florida

- Mentored first-year undergraduate researchers through their first structured research experience, supporting research planning, project development, technical implementation, poster preparation, and research communication.
- Advised projects involving VR, visual language models, gesture recognition, Unity, Python backends, OpenAI API integration, and human-computer interaction.

Academic Service and Honors

Peer Review Service

- ACM CHI Conference on Human Factors in Computing Systems 2026, 2027
- ACM Conference on Conversational User Interfaces 2026
- IEEE Conference on Virtual Reality and 3D User Interfaces 2026
- NordiCHI Research Papers 2026
- ACM CSCW Posters 2026

Honors and Recognition

- Evolutionary Complexity (EPlex) Research Group Scholarship, UCF CECS (\$1,000) 2026
- Special Recognition for Outstanding Reviews, ACM CUI 2026
- Special Recognition for Outstanding Reviews, NordiCHI 2026