Reggie Segovia

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Website: https://rs-dkd.github.io/my-portfolio/

Research Interests

Human-Computer Interaction: Projected Reality, Graphics, Tangible Interfaces, Natural User Interfaces

AI-Augmented Systems: LLMs in Creative Contexts, Conversational AI, Intelligent Interfaces

Immersive Technologies: VR/AR for Scientific Visualization, Spatial Computing, Mixed Reality

Education

Bachelor of Science in Computer Science, *Summa Cum Laude* | University of Florida, Gainesville, FL

January 2024 – December 2025

- GPA: 3.83/4.0
- Research Focus: Human-Computer Interaction, Computer Graphics
- Honors: Summa Cum Laude, Bright Futures Florida Academic Scholars Award (100% Tuition Scholarship), Dean's List Spring 2025
- Relevant Courses: Virtual Reality, Computational Media, Algorithm Abstraction & Design, Artificial Intelligence, Computational Linear Algebra, Data Science, Operating Systems, CS Teaching & Learning

Associate of Arts | University of Central Florida, Orlando, FL

May 2022 – December 2023

Publications

Segovia, Reggie D., Grill, Brandon, Palmeira, Eduardo G. Q., Lopez, Efren R., Venkatakrishnan, Rohith, Venkatakrishnan, Roshan, Kalyanaraman, Sriram, and de Siqueira, Alexandre G. (2026). Graspable Memories: A Sustainable Approach to Holding Personal Memories Through Occlusion-Aware Projected Interaction. In Proceedings of the *IEEE International Conference on Artificial Intelligence and Virtual Reality (AIxVR 2026)*. Osaka, Japan. **(Accepted / First Author)**

Segovia, Reggie D. (2025). Beyond the Grasp: Embodied Projected Mixed Reality with Volumetric Gestures and Novel Applications. Undergraduate Honors Thesis, University of Florida. Advisor: Dr. Alexandre Gomes de Siqueira. **(Accepted / First Author)**

Research Experience

Research Assistant | University of Florida - HCI Lab

April 2025 – Present | Advisor: Dr. Alexandre Gomes de Siqueira

Graspable Memories (Accepted to IEEE AIxVR 2026) & Beyond the Grasp (Honors Thesis)

- Sole developer and architect of Unity-based Embodied Projected Mixed Reality (EPMR) system using MediaPipe gesture recognition for seamless on-hand photo interaction through natural occlusion
- Extended platform into fully volumetric interaction model supporting hand tilt, improved tracking latency, continuous rotation, and spatial depth as control inputs for nuanced content manipulation
- Designed and conducted user experiments, contributed to paper writing, and developed entire Unity environment and interaction pipeline
- Broadened EPMR applications from personal media interaction to collaborative creative systems platform

VirtualHuman 2.0: Conversational AI in VR

- Built immersive VR conversational agent system in Unreal Engine integrating Whisper (speech-to-text), Gemini LLM, and ElevenLabs (text-to-speech)
- Refined NeuroSync lip-sync integration and general animation systems for realistic human-AI interaction
- Created simplified AI interaction platform and contributed to research on power dynamics in human-virtual agent gesture-based interactions
- Spearheaded integration of agentic AI framework into current system, authoring original proposal and leading implementation of autonomous reasoning and multi-step task execution capabilities

Embodied Inscriptions: Fingerprints as Interactive Traces

- Designed UI and contributed to user evaluation for system repositioning fingerprints as expressive traces of presence and memory embedded in sculptable materials
- Supported development and troubleshooting of fingerprint tracking system on moldable 3D printed materials, exploring future implementation approaches

Research Assistant | University of Florida - SurfLab

May 2025 – Present | Advisor: Dr. Jörg Peters

BlendReality: VR 3D Modeling with Polyhedral-Net Splines

- Lead developer of a novel VR modeling tool that integrates specialized, smoothing algorithms with intuitive spatial modeling operations while maintaining desktop software capabilities
- Integrated Dr. Peters' Polyhedral-Net-Splines (PnS) algorithms through C# wrapper in Unity for real-time quad-dominant mesh smoothing
- Developed primitive shape creation, mesh operations, and import/export functionality (.obj, .bv, .iges, .step formats)
- Compiled literature on VR modeling best practices to establish intuitive interaction paradigms replacing mouse-keyboard interfaces with natural hand gestures

AR/VR-Guided Neonatal Occupational Therapy (with Shands Hospital)

- Lead developer collaborating with Dr. Michael Weiss designing VR/AR platform for neonatal occupational therapy training
- Created VR training environment replicating parent-performed exercises on virtual child with real-time performance feedback
- Developed AR passthrough interface guiding parents through therapy routines with non-obstructive video and audio instructions
- Implemented session replay functionality enabling occupational therapists to remotely monitor and review parent performance

Research Assistant | University of Florida - AI-Share Lab

June 2025 – Present | Advisor: Dr. Karla Saldaña Ochoa

FloodRisk Digital Twins in VR (NVIDIA-Funded)

- Led comparative study evaluating procedural modeling workflows (ArcGIS Pro, CityEngine, BlenderGIS, Blosm, Google 3D Tiles) for generating realistic building models from geospatial data
- Developed Python automation scripts in Blender for data filtering, mesh optimization, and GLB format standardization for large-scale urban environments
- Collected and formatted building models from government sources for AI training using HiperGator high-performance computing cluster
- Modeled 30+ Gainesville buildings using real-world textures combining GIS satellite data, basemap imagery, and Google Street View
- Designed VR flood simulation interface in Unreal Engine with user tagging system for perceived damage/risk assessment and data-driven UI for subjective perception capture
- Implemented in-game survey functionality and optimized platform performance for enhanced user experience

Teaching Experience

Peer Mentor - Introduction to Virtual Reality | University of Florida

August 2025 – Present | Instructor: Dr. Alexandre Gomes de Siqueira

- Supporting instruction for a cross-listed VR course with 150+ students covering Unity XR development
- Grading assignments and facilitating lab sessions on VR hardware setup, tracking systems, and spatial interaction design
- Providing detailed feedback on 3D programming concepts and debugging VR applications

Technical Skills

Programming Languages: Python, C++, C#, Swift, JavaScript, Java, PHP, C

Immersive Technologies: Unity XR, Unreal Engine, Projected Reality, Spatial Computing, MediaPipe Hand Tracking, LiveLink

AI & Machine Learning: Computer Vision, Natural Language Processing, TensorFlow, PyTorch, Neural Networks, LLM Integration (Whisper, Gemini, ElevenLabs), Agentic AI Systems, Multi-Agent Frameworks, Autonomous Reasoning

Graphics & Modeling: Blender, ArcGIS Pro, CityEngine, Polyhedral-Net Splines, Mesh Processing, Procedural Generation

High-Performance Computing: CUDA, OpenCL, Parallel Computing, GPU Optimization, HiperGator Cluster

Development Tools: Git, Linux, MySQL, React, Three.js, API Integration, iOS Development

Leadership & Service

Executive Board - Webmaster | Tau Sigma National Honor Society

August 2025 – Present

References available upon request