

RYAN CANALES

[Personal Website](#)

canales.ryan@outlook.com

(713) 530-4184

RESEARCH NARRATIVE

I am a **visual computing researcher** specializing in the **animation and perception of virtual humans** to advance interactive virtual experiences. My research combines technical expertise in **deep learning (AI/ML)** and animation with **human-centered user studies** to drive development of interactive virtual humans and avatar-mediated **immersive VR/XR experiences**. My research has enabled me to contribute to successful **multi-institutional and interdisciplinary collaborations** with experts in **psychology, medicine, health communications**, and **digital production**, publishing in venues such as **IEEE TVCG, IEEE VR, ACM VRST, and ACM MIG**. By drawing on the psychology of communication, trust, and embodiment, I aim to develop virtual humans and avatars that facilitate communication, learning, and self-expression.

EDUCATION

Doctor of Philosophy (Ph.D) in Computer Science August 2018 - December 2024

Clemson University, Clemson, SC, Advisor: Dr. Sophie Jörg

Dissertation: Real-Time Motion Augmentation and Synthesis for Animating the Hands and Eyes of Virtual Humans and Avatars

Master of Science (M.S.) in Computer Science December 2023

Clemson University, Clemson, SC

Bachelor of Science (B.S.) in Visualization August 2013 - May 2018

Texas A&M University (TAMU), College Station, TX

TECHNICAL SKILLS

Programming Languages: Python, C#, C++, C, R, Java

AI/ML Development: PyTorch, Keras, Pybullet, OpenAI Gym

Research: Study design, statistical analysis

Graphics and Visualization: Unity, Unreal, Maya, Blender

EXPERIENCE

University of Florida August 2025 - Present

Postdoctoral Associate, Virtual Experiences Research Group (VERG) Gainesville, FL

- Contribute to NIH and ACS funded projects on improving equity and access in cancer prevention and treatment. Advised by Dr. Benjamin Lok.
- Design and evaluate interactive virtual humans to support health communication.
- Mentor graduate and undergraduate students, supporting experimental design, publication development, and dissemination of results.

Clemson University August 2018 - July 2024

Graduate Assistant Clemson, SC

- Conduct research in Extended Reality (XR), including interaction and avatar animation in VR/AR/XR.
- Create VR/XR simulations and design user studies to evaluate the effects of interaction and avatar animation techniques on performance, user preference, and user experience.

- Develop and evaluate deep learning models for virtual human and avatar motion generation.
- Capture human motion datasets using Motion Capture (Mocap) technology for hand and eye tracking.
- Implement data analysis methods for analyzing motion capture data and performing statistical inference on experimental data collected from VR/XR user studies.
- Mentor undergraduates and supervise their research in computer graphics and virtual reality.

Meta Reality Labs

June 2022 - November 2022

Research Scientist Intern

Sausalito, CA

- Co-led the development of a VR user study, including project planning, study design, production, and implementation of the VR experience using Unreal Engine 5 and MetaHumans.
- Collaborated with an interdisciplinary team of artists and researchers.
- Published and presented our work at IEEE-VR.

REFEREED ARTICLES

Experiential Knowledge in Multi-Agent Virtual Health Systems: The Value of an Expert Patient Agent

Danish Tamboli, **Ryan Canales**, Christopher You, Peter Reese, Vishnu Potluri, Benjamin Lok
ACM International Conference on Intelligent Virtual Agents (IVA). 2026. (Accepted)

Build-A-Being Yourself: A web-based system for authoring embodied conversational agents in healthcare research

Christopher You, Rashi Ghosh, Andrew Maxim, Xuening Peng, Danish Tamboli, Zhanhong Huang, **Ryan Canales**, Roshan Venkatakrishnan, Benjamin Lok
Human-Computer Interaction International (HCII). 2026. [\[Paper\]](#)

Real-time Hand Motion Synthesis for Playing a Virtual Guitar

Ryan Canales and Sophie Jörg *Motion, Interaction and Games (MIG)*. 2025. [\[Paper\]](#)

Does Hand Size Matter? The Effect of Avatar Hand Size on Non-verbal Communication in VR

Jackson Henry, **Ryan Canales**, Catherine Stolarski, Alex Adkins, Rohith Venkatakrishnan, Roshan Venkatakrishnan, Sophie Jörg *IEEE Transactions on Visualization and Computer Graphics (TVCG)*. 2025. [\[Paper\]](#)

Hands or Controllers? How Input Devices and Audio Impact Collaborative VR

Alex Adkins **Ryan Canales**, and Sophie Jörg *ACM Symposium on Virtual Reality Software and Technology (VRST)*. 2024. [\[Paper\]](#)

The Impact of Avatar Stylization on Trust

Ryan Canales, Doug Roble, and Michael Neff *IEEE Conference on Virtual Reality and 3D User Interfaces (IEEE VR)*. 2024. [\[Paper\]](#)

Investigating the Effects of Avatarization and Interaction Techniques on Near-field Mixed Reality Interactions with Physical Components

Roshan Venkatakrishnan, Rohith Venkatakrishnan, **Ryan Canales**, Balagopal Raveendranath, Christopher Pagano, Andrew C. Robb, Wen-Chieh Lin, Sabarish V. Babu *IEEE Transactions on Visualization and Computer Graphics (TVCG)*. 2024. [\[Paper\]](#)

The Effects of Secondary Task Demands on Cybersickness in Active Exploration Virtual Reality Experiences

Rohith Venkatakrishnan, Roshan Venkatakrishnan, **Ryan Canales**, Balagopal Raveendranath, Dawn M. Sarno, Andrew C. Robb, Wen-Chieh Lin, Sabarish V. Babu *IEEE Transactions on Visualization and Computer Graphics (TVCG)*. 2024. [\[Paper\]](#)

Real-Time Conversational Gaze Synthesis for Avatars

Ryan Canales, Sophie Jörg, and Eakta Jain *Motion, Interaction and Games (MIG)*. 2023.
[\[Paper\]](#) [\[Code\]](#)

Evaluating Grasping Visualizations and Control Modes in a VR Game

Alex Adkins, Lorraine Lin, Aline Normoyle, Ryan Canales, Yuting Ye, and Sophie Jörg *ACM Transaction on Applied Perception (TAP)*. 2021. [\[Paper\]](#)

Performance Is Not Everything: Audio Feedback Preferred Over Visual Feedback for Grasping Task in Virtual Reality

Ryan Canales and Sophie Jörg *Motion, Interaction and Games (MIG)*. 2020.
[\[Paper\]](#)

Virtual Grasping Feedback and Virtual Hand Ownership

Ryan Canales, Aline Normoyle, Yu Sun, Yuting Ye, Massimiliano Di Luca, Sophie Jörg *ACM Symposium on Applied Perception 2019 (SAP)*. 2019. [\[Paper\]](#)

SELECTED PROJECTS

Real-time Hand Motion Synthesis for Playing a Virtual Guitar Published MIG 2025

- Collected motion capture data of myself playing guitar that includes detailed hand motion and audio
- Developed NN architecture, training pipeline, and inference pipeline for generating hand animation for guitar using guitar tablature as input

Deep Reinforcement Learning: Imitation Learning [\[Project Webpage\]](#) April 2021

- Proposed and implemented imitation learning project for conversational virtual humans
- Implemented Proximal Policy Optimization (PPO) with Generalized Advantage Estimation (GAE)
- Project developed using Python, Pybullet, OpenAI Gym, and PyTorch

Finger Motion Synthesis [\[Project Webpage\]](#) June 2020 - August 2020

- Developed motion graph based finger motion synthesis algorithm using motion capture data
- Implemented a Convolutional Neural Network with triplet loss in Keras for comparing human motions

Character Motion Planning [\[Project Webpage\]](#) [\[Code\]](#) April 2020

- Created a human character locomotion planning program in Unity and C#
- Designed a finite state machine with different motions as the actions
- Implemented A* to find a sequence of actions for the character to reach a goal and avoid obstacles

SERVICE

Committees

- International Program Committee (IPC) - EuroXR 2026

Reviewer

- IEEE VR (2025, 2026), SIGGRAPH (2025), CSCW (2025), ISMAR (2024, 2025), VRST (2024, 2025), TVCG (2025), MIG (2025), ETRA (2026), Displays (2026)

Student Volunteer for IEEE VR 2024

March 2024

- Helped with a variety of tasks to ensure the success of the conference, such as testing audio and video equipment, answering registration questions, and helping with demos.

Volunteer for STEM ALL IN

October 2019, October 2021, January 2022

- Volunteered for Clemson's STEM ALL IN to recruit underrepresented students to graduate school
- Gave lab tours to prospective undergraduates to show them research opportunities for their major
- Participated in panels to address questions and concerns regarding graduate school

TEACHING AND SUPERVISION

Postdoctoral Associate

August 2025 - Present

- Mentor 6 Ph.D. students at varying stages of their doctoral training, providing guidance on research design, methodology, and publication strategy.
- Support Ph.D. students in developing independent, high-impact research agendas aligned with their career goals.
- Supervise and mentor 4 undergraduate researchers, overseeing project scoping, technical development, and research communication.

Graduate Research Assistant

August 2018 - December 2024

REU Mentor

Clemson University

- Mentored undergraduate researchers through Clemsons REU program (2019, 2020, 2021, 2023, 2024)
- Developed research-oriented projects for the REU students to gain research experience
- Provided technical training, feedback on experimental design, and guidance on final presentations.

Teaching Assistant

January - May 2022

- Undergraduate level discrete mathematics
- Graduate level deep learning

AWARDS, HONORS, AND CERTIFICATES

Awards

- Best Paper Presentation, IEEE VR 2024 (“The Effects of Secondary Task Demands on Cybersickness in Active Exploration Virtual Reality Experiences”)
- Honorable Mention for Best Paper Presentation, IEEE VR 2024 (“Investigating the Effects of Avatarization and Interaction Techniques on Near-field Mixed Reality Interactions with Physical Components”)

Grants and Scholarships

- Cadence Latinx Students in Technology Scholarship (Fall 2021)
- IEEEVR 2021 Diversity Grant Recipient
- Clemson University Graduate Travel Grant (Fall 2019)

Deep Learning Specialization

July 2019 - September 2019

Certificate [\[Link\]](#)

Coursera

- Five course specialization covering deep learning topics including convolutional neural networks, sequence models, optimizers, hyperparameter tuning, and real world applications