Alexander Giovannelli

agiovannelli@vt.edu
agiovannelli.github.io

Research Interests

Human-Computer Interaction (HCI)
Human-AI Interaction (HAII)
Extended Reality (XR)
Collaborative Virtual Environments (CVEs)
Computer-Supported Cooperative Work (CSCW)
User Experience Design (UX)

Education

Virginia Tech — Blacksburg, VA, USA
Ph.D. in Computer Science advised by Doug A. Bowman, GPA: 4.00/4.00 — Aug. 2021–Present

University of Cincinnati — Cincinnati, OH, USA
B.S. in Computer Engineering with German Studies minor, GPA: 3.30/4.00 — Aug. 2013–May 2018

Publications

Peer Reviewed Journal Papers

[J1.] Working in Extended Reality in the Wild: Worker and Bystander Experiences of XR Virtual Displays in Public Real-World Settings — Oct. 2025
L. Pavanatto, V. Biener, J. Chandran, S. Kalamkar, F. Lu, J.J. Dudley, J. Hu, G.N. Ramirez-Saffy, P.O. Kristensson, A. Giovannelli, L. Schlueter, J. Müller, J. Grubert, D.A. Bowman
IEEE Transactions on Visualization and Computer Graphics (TVCG)

[J2.] Gestures vs. Emojis: Comparing Non-Verbal Reaction Visualizations for Immersive Collaboration — Oct. 2023
A. Giovannelli, J. Thomas, L. Lane, F. Rodrigues, D. A. Bowman
IEEE Transactions on Visualization and Computer Graphics (TVCG)

Peer Reviewed Conference Papers

[C1.] Exploring Bichronous Collaboration in Virtual Environments — Nov. 2025
A. Giovannelli, S. Davari, C. Connor, F.C. Murphy, T. Davis, H. Miao, V. Chheang, B. Giera, T. Bremer, D.A. Bowman
ACM Symposium on Virtual Reality Software and Technology (VRST)

[C2.] Investigating the Influence of Playback Interactivity during Guided Tours for Asynchronous Collaboration in Virtual Reality — Mar. 2025
A. Giovannelli, L. Pavanatto, S. Davari, H. Miao, V. Chheang, B. Giera, T. Bremer, D.A. Bowman
IEEE Conference Virtual Reality and 3D User Interfaces (VR)

[C3.] Exploring Multiscale Navigation of Homogeneous and Dense Objects with Progressive Refinement in Virtual Reality — Mar. 2025
L. Pavanatto, A. Giovannelli, B. Giera, T. Bremer, H. Miao, D.A. Bowman
IEEE Conference Virtual Reality and 3D User Interfaces (VR)

[C4.] AMP-IT and WISDOM: Improving 3D Manipulation for High-Precision Tasks in Virtual Reality — Oct. 2023
F. Rodrigues, A. Giovannelli, L. Pavanatto, H. Miao, J.C. Oliveira, D.A. Bowman
IEEE International Symposium on Mixed and Augmented Reality (ISMAR)

[C5.] Exploring the Impact of Visual Information on Intermittent Typing in Virtual Reality Oct. 2022
A. Giovannelli, L. Lisle, D.A. Bowman
IEEE International Symposium on Mixed and Augmented Reality (ISMAR)

Peer Reviewed Workshops, Posters, & Abstracts

[W1.] Planet Purifiers: A Collaborative Immersive Experience Proposing New Modifications to HOMER and Fishing Reel Interaction Techniques Mar. 2025
A. Giovannelli, F.C. Murphy, T. Davis, C. Lee, R. Abulikemu, M. Gallagher, S. Sharma, L. Lisle, D.A. Bowman
IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW)

[W2.] Exploring the Effects of Level of Control in the Initialization of Shared Whiteboarding Sessions in Collaborative Augmented Reality Mar. 2025
L. Lane, J. Thomas, A. Giovannelli, I. Tahmid, D.A. Bowman
IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW)

[W3.] The Alchemist: A Gesture-Based 3D User Interface for Engaging Arithmetic Calculations Mar. 2024
L. Lane, A. Giovannelli, I. Tahmid, F. Rodrigues, C. Ilo, D. Hsu, C. Lougiakis, S. Davari, D.A. Bowman
IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW)

[W4.] CoLT: Enhancing Collaborative Literature Review Tasks with Synchronous and Asynchronous Awareness Across the Reality-Virtuality Continuum Oct. 2023
I. Tahmid, F. Rodrigues, A. Giovannelli, L. Lisle, J. Thomas, D.A. Bowman
IEEE International Symposium on Mixed and Augmented Reality Adjunct (ISMAR-Adjunct)

[W5.] CLUE HOG: An Immersive Competitive Lock-Unlock Experience using Hook On Go-Go Technique for Authentication in the Metaverse Mar. 2023
A. Giovannelli, F. Rodrigues, S. Davari, I. Tahmid, L. Lane, C. Connor, K. Davidson, G.N. Ramirez-Saffy, B. David-John, D.A. Bowman
IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW)

[W6.] A Communication-Focused Framework for Understanding Immersive Collaboration Experiences Mar. 2023
J. Thomas, S. Won Lee, A. Giovannelli, L. Lane, D.A. Bowman
IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW)

[W7.] Clean the Ocean: An Immersive VR Experience Proposing New Modifications to Go-Go and WiM Techniques Mar. 2022
L. Lisle, F. Lu, S. Davari, I. Tahmid, A. Giovannelli, C. Llo, L. Pavanatto, L. Zhang, L. Schlueter, D.A. Bowman
IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW)

Research Experience

Virginia Tech Jan. 2023–Present
Graduate Research Assistant

- Conducted a systematic literature review of 100+ academic articles on XR-supported collaborative work, identifying two research gaps in user communication across asynchronous and synchronous contexts
- Developed two XR applications for remote work using user-centered design principles, conducting interviews, facilitating co-design sessions, and iteratively prototyping in Unity with C# scripting
- Designed and led two user studies with 40 participants examining the influence of collaborator presence in XR, employing quantitative measures (system interactions, trust, satisfaction, information recall) and qualitative research methods (semi-structured interviews, think-aloud protocols)
- Integrated quantitative analyses (statistical tests using Python and R) with qualitative analyses (inductive thematic coding) to produce findings published in two peer-reviewed conference proceedings

Lawrence Livermore National Laboratory May 2023–Aug. 2023

Computing Research Intern

- Built a VR system for asynchronous training and knowledge sharing, incorporating recording and playback features in Unity with C# scripting
- Evaluated the system with 40 participants through a mixed-methods study comparing VR to traditional video-based training, employing quantitative metrics (engagement, task load, information recall) and qualitative methods (semi-structured interviews)
- Synthesized statistical analyses using Python and R with inductive thematic coding to generate findings published in a peer-reviewed conference

Virginia Tech May 2022–Aug. 2022

Graduate Research Assistant

- Performed a literature review of 50+ academic articles on embodiment and social interaction in XR, identifying a research gap in visualizing non-verbal gestures using avatars
- Created a VR system to evaluate the noticeability of non-verbal gesture visualization, capturing quantitative data (eye-tracking, response time, accuracy) and qualitative insights (semi-structured interview, observation)
- Mentored two graduate students in designing and analyzing a mixed methods study using the system with 30 participants, culminating in a peer-reviewed journal publication

Work Experience

JPMorgan Chase & Co. Jul. 2018–Jul. 2021

Associate Software Engineer

- Served as the sole developer for the Chase COVID Hub, partnering with product, design, and legal teams to deliver financial resource tools to 58 million customers
- Co-developed the Chase Security Center, implementing six major privacy and security controls using JavaScript, HTML, and CSS
- Redesigned the Chase Offers widget with proprietary styling frameworks across web, Android, and iOS, contributing to $2 billion in monthly gross revenue

Siemens Healthineers Jan. 2017–Aug. 2017

Software Engineer Intern

- Co-developed a physician-centric procedural management system in C#, enabling precise control of advanced therapy devices across eight product models
- Created 10+ system architecture diagrams in Sparx Systems Enterprise Architect to document design dependencies and streamline organizational knowledge transfer
- Bridged communication across globally distributed software teams by presenting in German and English during weekly system integration meetings

Granville Exempted Village Schools May 2016–Jul. 2016

Systems Administrator Intern

- Upgraded Windows and Linux server infrastructure, accelerating the administration of 1000+ devices while enabling seamless software deployments for enhanced classroom learning
- Led the Google Chromebook management system, equipping every student with a device across two schools

Matrix Technologies, Inc. Aug. 2015–Dec. 2015

Computer Programmer and Systems Analyst Intern

- Synthesized insights from three cross-functional stakeholders to inform the implementation of two engineering and project management features
- Developed project dashboards using C# and Windows Forms, providing critical management tools across six offices

Matrix Technologies, Inc. Aug. 2014–Dec. 2014
Computer Programmer and Systems Analyst Intern

- Built a project dashboard using C# and Windows Forms, improving management of 300+ employees

Awards

Davenport Leadership Fellowship 2023–2024
Virginia Tech

Leonard P. Gollobin Scholarship 2023–2024
Interservice/Industry Training, Simulation and Education Conference (I/ITSEC)

Best Paper Honorable Mention [C5.] 2022
IEEE International Symposium on Mixed and Augmented Reality (ISMAR)

3DUI Contest Best Paper [W7.] 2022
IEEE Conference Virtual Reality and 3D User Interfaces (VR)

International Co-op Program Scholarship 2016–2017
University of Cincinnati

Cooperative Education Scholarship 2014–2016
Matrix Technologies, Inc.

Cincinnatus Scholarship 2013–2014
University of Cincinnati

Student Mentoring and Advising

Graduate Students

Tanya Dinesh	Jun. 2025–Dec. 2025
Sahil Sharma	Oct. 2024–Mar. 2025
Rehema Abulikemu	Sep. 2023–Dec. 2025

Undergraduate Students

Celine Mang	Jul. 2025–Oct. 2025
Chaerin Lee	Oct. 2024–Mar. 2025
Trey Davis	Aug. 2024–Mar. 2025
Fionn Murphy	Aug. 2024–Mar. 2025

Teaching

Graduate Teaching Assistant Aug. 2022–Dec. 2022
Virginia Tech Department of Computer Science: Comparative Languages (CS-3304)

Graduate Teaching Assistant Jan. 2022–May 2022
Virginia Tech Department of Computer Science: Software Design & Data Structures (CS-2114)

Graduate Teaching Assistant Aug. 2021–Dec. 2021
Virginia Tech Department of Computer Science: Software Design & Data Structures (CS-2114)

Invited Talks

College of Computing and Software Engineering at Kennesaw State University Dec. 2025
Title: Towards Immersive Collaboration Across Temporal States

Center for Human-Computer Interaction at Virginia Tech Sep. 2025
Title: Exploring Bichronous Collaboration in Virtual Environments

Professional Service

Student Volunteer Chair 2025–Present
IEEE International Symposium on Mixed and Augmented Reality (ISMAR)

Ethics and Privacy Committee Member 2024–Present
Virtual Experience Research Accelerator (VERA)

Communications Chair 2023–2024
IEEE Conference Virtual Reality and 3D User Interfaces (VR)

Student Volunteer 2023
IEEE International Symposium on Mixed and Augmented Reality (ISMAR)

Student Volunteer 2022
IEEE International Symposium on Mixed and Augmented Reality (ISMAR)

Peer Review Experience

IEEE Transactions on Visualization and Computer Graphics (TVCG)
Years served: 2024, 2025

IEEE Conference Virtual Reality and 3D User Interfaces (VR)
Years served: 2023, 2024, 2025

IEEE International Symposium on Mixed and Augmented Reality (ISMAR)
Years served: 2024, 2025

ACM Conference on Human Factors in Computing Systems (CHI)
Years served: 2025

ACM Symposium on Virtual Reality Software and Technology (VRST)
Years served: 2025

ACM Symposium on Spatial User Interaction (SUI)
Years served: 2024