ALEXANDER GIOVANNELLI

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RESEARCH INTERESTS

- Human-Computer Interaction (HCI)
- Extended Reality (XR)
- User Experience Design (UX)
- Usability Evaluation
- Computer-Supported Cooperative Work (CSCW)
- Human-Language Model Interaction
- Collaborative Virtual Environments (CVEs)
- 3D Interaction Techniques

EDUCATION

Ph.D. in Computer Science | Virginia Tech
Degree expected May 2026

- GPA: 4.0
- Thesis: Investigating Immersive Collaboration Across Temporal States
- Advised by Dr. Doug Bowman

B.S. in Computer Engineering | University of Cincinnati
Degree obtained May 2018

- GPA: 3.3
- Minors: German Studies and Computer Science
- Graduated with Honors from the College of Engineering International Cooperative Education Program

EXPERIENCE

Graduate Research Assistant | Virginia Tech | Blacksburg, VA, USA
January 2023 – Present

- Investigated how XR tools enhance remote team collaboration via Collaborative Virtual Environments, discovering two key gaps in the temporal flow of collaborative work
- Created two XR applications focused on remote collaboration, incorporating user-centered design principles to improve user experience
- Facilitated two mixed methods user studies gathering data from 40 participants to assess the usability of new collaboration features, resulting in two peer-reviewed publications

Computing Research Intern | Lawrence Livermore National Laboratory | Livermore, CA, USA
May 2023 – August 2023

- Collaborated with 5+ subject matter experts to define the goals and scope of a 10-week summer research initiative focused on remote collaboration technologies
- Designed and developed a VR system to support asynchronous collaboration, aimed at improving training and knowledge transfer in distributed environments
- Led user evaluations comparing the system to traditional video-based training with results showing significant performance gains and published findings at a premier VR conference

Graduate Research Assistant | Virginia Tech | Blacksburg, VA, USA
May 2022 – August 2022

- Examined findings from 50+ peer-reviewed articles on embodiment and social interaction in XR, identifying a major research gap in avatar-mediated communication
- Conceptualized and delivered presentations on research insights to secure stakeholder interest, resulting in the development of an XR prototype
- Directed the user evaluation of the XR prototype with 30 participants, identifying benefits and deficits of visual information on embodied communication in Collaborative Virtual Environments

Associate Software Engineer | J.P. Morgan Chase & Co. | Columbus, OH, USA
July 2018 – July 2021

- Spearheaded the construction of the Chase COVID Hub, empowering 58 million clients to effortlessly navigate and secure crucial financial support
- Engineered the Chase Security Center, focusing on user-centered design principles to boost accessibility to six major privacy and security controls
- Revamped the Chase Offers widget interface for web, Android, and iOS platforms, directly contributing to $2 billion in monthly gross revenue
- Recognized for outstanding contributions to the Chase.com customer dashboard, leading to recognition as a top 5% software engineer and earning an early promotion within the Software Engineering Program

Software Engineer Intern | Siemens Healthineers | Forchheim, BY, DE
January 2017 – August 2017

- Architected a physician-centric procedural management system featuring intuitive workflows, enabling precise control of advanced therapy devices across eight product models
- Visualized system architecture through 10+ diagrams documenting design iterations and essential functionalities, facilitating efficient knowledge transfer and streamlined communication across interdisciplinary XR teams
- Facilitated seamless communication across globally distributed software teams by presenting in both German and English during weekly integration meetings

Systems Administration Intern | Granville Exempted Village School District | Granville, OH, USA
May 2016 – July 2016

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

Computer Programmer and Systems Analyst Intern | Matrix Technologies, Inc. | Maumee, OH, USA
August 2015 – December 2015

- 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

Computer Programmer and Systems Analyst Intern | Matrix Technologies, Inc. | Maumee, OH, USA
August 2014 – December 2014

- Designed a project dashboard using C# and Windows Forms, improving management of team assignments for 300+ employees

PUBLICATIONS

Peer Reviewed Journal Papers

- L. Pavanatto et al., "Working in Extended Reality in the Wild: Worker and Bystander Experiences of XR Virtual Displays in Public Real-World Settings," in IEEE Transactions on Visualization and Computer Graphics, doi: 10.1109/TVCG.2025.3589283.
- *A. Giovannelli*, J. Thomas, L. Lane, F. Rodrigues and D. A. Bowman, "Gestures vs. Emojis: Comparing Non-Verbal Reaction Visualizations for Immersive Collaboration," in IEEE Transactions on Visualization and Computer Graphics, vol. 29, no. 11, pp. 4772-4781, Nov. 2023, doi: 10.1109/TVCG.2023.3320254.

Peer Reviewed Conference Papers

- *A. Giovannelli* et al., "Investigating the Influence of Playback Interactivity during Guided Tours for Asynchronous Collaboration in Virtual Reality," 2025 IEEE Conference Virtual Reality and 3D User Interfaces (VR), Saint Malo, France, 2025, pp. 23-33, doi: 10.1109/VR59515.2025.00027.
- L. Pavanatto, *A. Giovannelli*, B. Giera, T. Bremer, H. Miao and D. A. Bowman, "Exploring Multiscale Navigation of Homogeneous and Dense Objects with Progressive Refinement in Virtual Reality," 2025 IEEE Conference Virtual Reality and 3D User Interfaces (VR), Saint Malo, France, 2025, pp. 228-237, doi: 10.1109/VR59515.2025.00047.

- F. Rodrigues, *A. Giovannelli*, L. Pavanatto, H. Miao, J. C. d. Oliveira and D. A. Bowman, "AMP-IT and WISDOM: Improving 3D Manipulation for High-Precision Tasks in Virtual Reality," 2023 IEEE International Symposium on Mixed and Augmented Reality (ISMAR), Sydney, Australia, 2023, pp. 303-311, doi: 10.1109/ISMAR59233.2023.00045.
- *A. Giovannelli*, L. Lisle and D. A. Bowman, "Exploring the Impact of Visual Information on Intermittent Typing in Virtual Reality," 2022 IEEE International Symposium on Mixed and Augmented Reality (ISMAR), Singapore, Singapore, 2022, pp. 8-17, doi: 10.1109/ISMAR55827.2022.00014.

Peer Reviewed Workshops and Extended Abstracts

- *A. Giovannelli* et al., "Planet Purifiers: A Collaborative Immersive Experience Proposing New Modifications to HOMER and Fishing Reel Interaction Techniques," 2025 IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW), Saint Malo, France, 2025, pp. 1528-1529, doi: 10.1109/VRW66409.2025.00409.
- L. Lane, J. Thomas, *A. Giovannelli*, I. Tahmid and D. A. Bowman, "Exploring the Effects of Level of Control in the Initialization of Shared Whiteboarding Sessions in Collaborative Augmented Reality," 2025 IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW), Saint Malo, France, 2025, pp. 1101-1109, doi: 10.1109/VRW66409.2025.00220.
- L. Lane et al., "The Alchemist: A Gesture-Based 3D User Interface for Engaging Arithmetic Calculations," 2024 IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW), Orlando, FL, USA, 2024, pp. 1106-1107, doi: 10.1109/VRW62533.2024.00347.
- I. A. Tahmid, F. Rodrigues, *A. Giovannelli*, L. Lisle, J. Thomas and D. A. Bowman, "CoLT: Enhancing Collaborative Literature Review Tasks with Synchronous and Asynchronous Awareness Across the Reality-Virtuality Continuum," 2023 IEEE International Symposium on Mixed and Augmented Reality Adjunct (ISMAR-Adjunct), Sydney, Australia, 2023, pp. 831-836, doi: 10.1109/ISMAR-Adjunct60411.2023.00183.
- *A. Giovannelli* et al., "CLUE HOG: An Immersive Competitive Lock-Unlock Experience using Hook On Go-Go Technique for Authentication in the Metaverse," 2023 IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW), Shanghai, China, 2023, pp. 945-946, doi: 10.1109/VRW58643.2023.00315.
- J. Thomas, S. W. Lee, *A. Giovannelli*, L. Lane and D. Bowman, "A Communication-Focused Framework for Understanding Immersive Collaboration Experiences," 2023 IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW), Shanghai, China, 2023, pp. 301-304, doi: 10.1109/VRW58643.2023.00070.
- L. Lisle et al., "Clean the Ocean: An Immersive VR Experience Proposing New Modifications to Go-Go and WiM Techniques," 2022 IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW), Christchurch, New Zealand, 2022, pp. 920-921, doi: 10.1109/VRW55335.2022.00311.

AWARDS

Davenport Leadership Fellowship
2023-2024

ITSEC Leonard P. Gollobin Scholarship
2023-2024

IEEE ISMAR Best Conference Paper Honorable Mention
2022

IEEE VR Best 3DUI Contest Entry
2022

International Co-op Program Scholarship
2016-2017

Matrix Technologies, Inc. Cooperative Education Scholarship
2014-2016

PROFESSIONAL SERVICE

Virtual Experience Research Accelerator (VERA)
2024 – Present

- Inaugural member of the VERA Ethics and Privacy Committee

Poster Committee
2024 – 2025

- Reviewed and evaluated poster submissions for the IEEE VR 2025 conference

Communications Chair
2023 – 2024

- Setup and moderated instant messaging platforms for the IEEE VR 2024 conference

Student Volunteer
2023

- Facilitated the setup and breakdown of presentation rooms at the IEEE ISMAR 2023 conference

Student Volunteer
2022

- Executed on-site registration processes for attendees at the IEEE ISMAR 2022 conference

PEER REVIEW

IEEE Transactions on Visualization and Computer Graphics
Reviewed two journal papers

ACM VRST 2025
Reviewed three conference papers

IEEE ISMAR 2025
Reviewed four conference papers and received special recognition for outstanding review

IEEE VR 2025
Reviewed five poster paper submissions

IEEE ISMAR 2024
Reviewed one journal paper and one conference paper

ACM SUI 2024
Reviewed one conference paper

IEEE VR 2024
Reviewed one conference paper and one workshop paper

TEACHING

Graduate Teaching Assistant | Virginia Tech
August 2022 – December 2022

- Comparative Languages (CS-3304)

Graduate Teaching Assistant | Virginia Tech
August 2021 – May 2022

- Software Design and Data Structures (CS-2114)