

Alexander Giovannelli

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SUMMARY

My research focuses on the intersection of Human-Computer Interaction (HCI), Extended Reality (XR), and 3D User Interfaces (3DUI), particularly in the context of collaboration. I am investigating ways to enhance asynchronous collaborative processes through immersive technologies. Currently, I am developing and assessing systems that capture presenter actions, offering additional visuals and interactive elements for observer playback.

EDUCATION

Virginia Tech Ph.D. in Computer Science advised by Doug A. Bowman, GPA: 4.00/4.00	Blacksburg, VA, USA Aug. 2021–Present
University of Cincinnati B.S. in Computer Engineering with German Studies minor, GPA: 3.30/4.00	Cincinnati, OH, USA Aug. 2013–May 2018

RESEARCH EXPERIENCE

Virginia Tech Graduate Research Assistant	Blacksburg, VA, USA Jan. 2023–Present
<ul style="list-style-type: none">– Explore methods for asynchronous and synchronous collaboration in immersive experiences– Conduct contextual inquiries and analyses to establish research objectives– Develop prototype virtual reality applications using C# and Unity technologies	
Lawrence Livermore National Laboratory Computing Research Intern	Livermore, CA, USA May 2023–Aug. 2023
<ul style="list-style-type: none">– Created guided tour prototypes for inspection processes in virtual reality, employing C# and Unity technologies– Facilitated meetings among multidisciplinary project stakeholders– Designed a user study procedure to evaluate prototype capabilities	
Virginia Tech Graduate Research Assistant	Blacksburg, VA, USA May 2022–Aug. 2022
<ul style="list-style-type: none">– Conducted research on avatar-mediated communication in augmented and virtual reality– Developed prototype applications and conducted experimental studies using C# and Unity technologies– Designed and executed user studies in compliance with Institutional Review Board (IRB) regulations	

WORK EXPERIENCE

JPMorgan Chase & Co. Associate Software Engineer I	Columbus, OH, USA Jul. 2018–Jul. 2021
<ul style="list-style-type: none">– Created front-end features for Chase.com using JavaScript, HTML, and CSS technologies– Designed and implemented user interfaces for minimum viable products using the Figma design tool– Wrote technical documentation for product owners and developers– Recognized as a subject matter expert in behavioral-driven development and CI/CD initiatives– Automated logging for proprietary systems using the Python programming language	

Siemens Healthineers

Software Engineer Intern

Forchheim, BY, DE

Jan. 2017–Aug. 2017

- Engineered back-end software for advanced therapy devices using the C# programming language
- Produced system architecture diagrams to document project design modifications and functionalities
- Represented the project team in international software integration meetings, utilizing both German and English languages

Granville Exempted Village Schools

Systems Administrator Intern

Granville, OH, USA

May 2016–Jul. 2016

- Deployed Windows and Linux server and workstation systems to bolster school network infrastructure
- Oversaw updates to proprietary devices, including operating system applications, packages, and images
- Directed summer technician team activities

Matrix Technologies, Inc.

Computer Programmer and Systems Analyst Intern

Maumee, OH, USA

Aug. 2015–Dec. 2015

- Developed full-stack internal software tools for engineers and project managers using C#, XML, and SQL
- Enhanced existing project management software based on user feedback
- Prepared software usage documents to provide detailed instructions on internal tool utilization

Matrix Technologies, Inc.

Computer Programmer and Systems Analyst Intern

Maumee, OH, USA

Aug. 2014–Dec. 2014

- Improved existing proprietary software using the C# programming language
- Conducted research on emerging technologies and proposed process enhancements to the development team
- Collaborated with stakeholders to coordinate project design changes

PUBLICATIONS

Peer Reviewed Journal Papers

- J1. **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

- C1. 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,” in *2023 IEEE International Symposium on Mixed and Augmented Reality (ISMAR)*, Sydney, Australia, 2023, pp. 303-311, doi: 10.1109/ISMAR59233.2023.00045.
- C2. **A. Giovannelli**, L. Lisle, and D. A. Bowman, “Exploring the impact of visual information on intermittent typing in virtual reality,” in *2022 IEEE International Symposium on Mixed and Augmented Reality (ISMAR)*, 2022, pp. 8-17, doi: 10.1109/ISMAR55827.2022.00014.

Peer Reviewed Workshops, Posters, Abstracts, & Contests

- W1. L. Lane, **A. Giovannelli**, I. A. Tahmid, F. Rodrigues, C. Ilo, D. Hsu, C. Lougiakis, S. Davari, and D. A. Bowman, “The Alchemist: A Gesture-Based 3D User Interface for Engaging Arithmetic Calculations”, to appear in *2024 IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW)*, 2024.
- W2. 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,” in *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.

- W3. **A. Giovannelli**, F. Rodrigues, S. Davari, I. A. Tahmid, L. Lane, C. Connor, K. Davidson, G. N. Ramirez, B. David-John, and D. A. Bowman, “Clue hog: An immersive competitive lock-unlock experience using hook on go-go technique for authentication in the metaverse”, in *2023 IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW)*, 2023, pp. 945–946, doi: 10.1109/VRW58643.2023.00315.
- W4. J. Thomas, S. W. Lee, **A. Giovannelli**, L. Lane, and D. Bowman, “A communication-focused framework for understanding immersive collaboration experiences”, in *2023 IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW)*, 2023, pp. 301–304, doi: 10.1109/VRW58643.2023.00070.
- W5. L. Lisle, F. Lu, S. Davari, I. A. Tahmid, **A. Giovannelli**, C. Llo, L. Pavanatto, L. Zhang, L. Schlueter, and D. A. Bowman, “Clean the ocean: An immersive vr experience proposing new modifications to go-go and wim techniques”, in *2022 IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW)*, 2022, pp. 920–921, doi: 10.1109/VRW55335.2022.00311.
- W6. E. Mohammadrezaei, **A. Giovannelli**, L. Lane, and D. Gračanin, “A digital twin based approach to smart lighting design”, in *2022 Winter Simulation Conference (WSC)*, 2022.

PROJECTS

- Guided Tours for Multiscale Collaborative Virtual Environments Jul. 2023–Present
Design and prototype a virtual environment for collaborative multiscale inspection processes
- Surface Generation for Extended Reality Collaboration Jun. 2022–Sept. 2023
Prototype and test a multi-user environment for creating and collaborating on shared surfaces

AWARDS

- Davenport Leadership Fellowship 2023–2024
- I/ITSEC Leonard P. Gollobin Scholarship 2023
- Best Conference Paper Honorable Mention IEEE ISMAR 2022 [C2] 2022
- Best 3DUI Contest Entry [W5] 2022
- International Co-op Program Scholarship 2016–2017
- Matrix Technologies, Inc. Co-op Scholarship 2014–2016

PROFESSIONAL SERVICE

- Committee Member 2024–Present
Inaugural member of the Virtual Experience Research Accelerator (VERA) Ethics and Privacy Committee
- Member of Computer Science Graduate Student Council 2021–Present
Represent the interests of the CS graduate student body and assist in event planning
- Member of the Center for Human-Computer Interaction 2021–Present
Actively participate in seminars at the Center focusing on the study of human-computer interaction
- Communications Chair 2023
Developed and moderated discussion platforms for the IEEE VR 2024 conference
- Student Volunteer 2023
Assisted in event operations at the IEEE International Symposium on Mixed and Augmented Reality 2023
- Student Volunteer 2023
Assisted in event operations at the IEEE VR 2023 satellite event
- Student Volunteer 2022
Assisted in event operations at the IEEE International Symposium on Mixed and Augmented Reality 2022

TEACHING

- **Graduate Teaching Assistant** at Virginia Tech
Comparative Languages (CS-3304) Aug. 2022–Dec. 2022
- **Graduate Teaching Assistant** at Virginia Tech
Software Design & Data Structures (CS-2114) Jan. 2022–May 2022
- **Graduate Teaching Assistant** at Virginia Tech
Software Design & Data Structures (CS-2114) Aug. 2021–Dec. 2021

SKILLS

Programming Languages: C#, JavaScript, Java, Python, HTML, CSS

Productivity Tools: Unity, Git, JMP, SPSS, LaTeX, Tableau