

Alexander Giovannelli

Phone: +1-740-258-9709
Email: agiovannelli@vt.edu
Site: <https://agiovannelli.github.io/>

SUMMARY

My research interest lies in the intersections of Human-Computer Interaction (HCI), Augmented/Virtual Reality (AR/VR), and 3D User Interfaces (3DUI) for collaboration. I am exploring how to improve asynchronous collaborative processes using immersive technologies. Specifically, I am prototyping and evaluating systems that capture collaborator actions, providing supplemental visuals and interactive mechanisms for future 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

SKILLS

Programming Languages: C#, JavaScript, Java, Python, HTML, CSS
Productivity Tools: Unity, Git, JMP, SPSS, LaTeX, Tableau

RESEARCH EXPERIENCE

Virginia Tech Graduate Research Assistant	Blacksburg, VA, USA Spring 2023 & Fall 2023
<ul style="list-style-type: none">– Investigated methods for asynchronous and synchronous collaboration in immersive experiences– Performed contextual inquiry and analysis to determine research goals– Created prototype virtual reality applications using C# and Unity technologies	
Lawrence Livermore National Laboratory Computing Research Intern	Livermore, CA, USA Summer 2023
<ul style="list-style-type: none">– Developed guided tour prototypes for inspection processes in virtual reality using C# and Unity technologies– Facilitated meetings between multi-disciplinary project stakeholders– Prepared user study procedure for evaluation of prototype capabilities	
Virginia Tech Graduate Research Assistant	Blacksburg, VA, USA Summer 2022
<ul style="list-style-type: none">– Conducted research regarding communication via avatars in augmented and virtual reality– Generated prototype applications and experimental studies using C# and Unity technologies– Designed and administered user studies in accordance with Institutional Review Board regulations	

WORK EXPERIENCE

JPMorgan Chase & Co. Associate Software Engineer I	Columbus, OH, USA Jul. 2018–Jul. 2021
<ul style="list-style-type: none">– Developed front-end features for Chase.com using JavaScript, HTML, and CSS technologies	

- Designed and implemented minimum viable product user interfaces via Figma design tool
- Authored technical documentation for product owners and developers
- Appointed subject matter expert in behavioral-driven development and CI/CD initiatives
- Automated logging of proprietary systems using the Python programming language

Siemens Healthineers

Forchheim, BY, DE

Software Engineer Intern

Jan. 2017–Aug. 2017

- Developed back-end software for use in advanced therapy devices using the C# programming language
- Created system architecture diagrams to record project design changes and behaviors
- Represented project team in international software integration meetings using German and English languages

Granville Exempted Village Schools

Granville, OH, USA

Systems Administrator Intern

May 2016–Jul. 2016

- Provisioned Windows and Linux server and workstation systems to support school network infrastructure
- Administered changes to proprietary devices regarding operating system applications, packages and images
- Managed summer technician team operations

Matrix Technologies, Inc.

Maumee, OH, USA

Computer Programmer and Systems Analyst Intern

Aug. 2015–Dec. 2015

- Created full-stack internal software tools for engineers and project managers using C#, XML and SQL
- Updated existing project management software according to submitted user feedback
- Authored software usage documents to elaborate on internal tool usage

Matrix Technologies, Inc.

Maumee, OH, USA

Computer Programmer and Systems Analyst Intern

Aug. 2014–Dec. 2014

- Enhanced existing proprietary software using the C# programming language
- Researched emerging technologies and presented potential process improvements for development team
- Coordinated project design changes with stakeholders

PROJECTS

- Test Environment for Precise Manipulation Tasks Sept. 2023–Present
Development of existing codebase to provide a study-based execution of precise manipulation experimentation
- Guided Tours for Multiscale Collaborative Virtual Environments Mar. 2023–Present
Design and prototyping of a virtual environment for collaboration in multiscale inspection processes
- CLUE: An Immersive Competitive Lock-Unlock Experience Nov. 2022–Mar. 2023
Development of a gamified experience for Metaverse security using token sequences as an authentication method
- Virtual Avatar Reaction Visualizations in VR Jun. 2022–Mar. 2023
Development of a virtual environment for user studies investigating avatar reaction visualizations in collaboration
- Surface Generation for MR Remote Collaboration Jun. 2022–Sept. 2023
Prototyping and testing of multi-user environment for shared surface creation and collaboration
- Environment for Intermittent Typing Experiments in VR Jan. 2022–May 2022
Creation of a virtual environment with mixed reality capabilities for conducting text-entry user studies
- Smart Lighting Design in Immersive VR Jan. 2022–Apr. 2022
Development of methods and techniques to support smart real-time lighting design in virtual reality
- Clean the Ocean: An Immersive VR Experience Oct. 2021–Mar. 2022
Creation of a virtual reality experience implementing novel enhancements to classic 3D interaction techniques

PUBLICATIONS

Peer Reviewed Journal Papers

1. **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

2. 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.
3. **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

4. 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.
5. **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.
6. 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.
7. 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.

AWARDS

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|---|-----------|
| • I/ITSEC Leonard P. Gollobin Scholarship | 2023 |
| • Davenport Leadership Fellowship | 2023-2024 |
| • Best IEEE ISMAR 2022 Conference Paper Honorable Mention [3] | 2022 |
| • Best 3DUI Contest Entry [7] | 2022 |
| • International Co-op Program Scholarship | 2016-2017 |
| • Matrix Technologies, Inc. Co-op Scholarship | 2014-2016 |

TEACHING

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|---|-------------------------|
| • Graduate Teaching Assistant at Virginia Tech
<i>Comparative Languages (CS-3304)</i> | Fall 2022 |
| • Graduate Teaching Assistant at Virginia Tech
<i>Software Design & Data Structures (CS-2114)</i> | Fall 2021 & Spring 2022 |

PROFESSIONAL SERVICE

- Communications Chair 2023–Present
Develop and moderate discussion platforms for the IEEE VR 2024 conference
- Student Volunteer 2023
Assist in event operations at IEEE International Symposium on Mixed and Augmented Reality 2023
- Student Volunteer 2023
Assist in event operations at IEEE VR 2023 satellite event in Blacksburg, Virginia
- Student Volunteer 2022
Assist in event operations at IEEE International Symposium on Mixed and Augmented Reality 2022
- 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
Active participant in the Center seminars regarding the study of human-computer interaction