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 presenter actions, providing supplemental visuals and interactive mechanisms for observer playback.

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

SKILLS

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

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

RESEARCH EXPERIENCE

Virginia Tech   Blacksburg, VA, USA
Graduate Research Assistant   Spring 2023 & Fall 2023

- 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   Livermore, CA, USA
Computing Research Intern   Summer 2023

- 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   Blacksburg, VA, USA
Graduate Research Assistant   Summer 2022

- 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.   Columbus, OH, USA
Associate Software Engineer I   Jul. 2018–Jul. 2021

- 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

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. 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.

W2. **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.

W3. 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.

W4. 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.

W5. 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

- Gesture-based 3DUI for Arithmetic Operations — Dec. 2023–Present
  Design and prototyping of a virtual environment for embodied learning of arithmetic operations
- Guided Tours for Multiscale Collaborative Virtual Environments — Jul. 2023–Present
  Design and prototyping of a virtual environment for collaboration in multiscale inspection processes
- Surface Generation for MR Remote Collaboration — Jun. 2022–Sept. 2023
  Prototyping and testing of multi-user environment for shared surface creation and collaboration

Awards

- I/ITSEC Leonard P. Gollobin Scholarship — 2023
- Davenport Leadership Fellowship — 2023–2024
- Best Conference Paper Honorable Mention IEEE ISMAR 2022 [C2] — 2022
- Best 3DUI Contest Entry [W4] — 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
- 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

Teaching

- **Graduate Teaching Assistant** at Virginia Tech Fall 2022
  Comparative Languages (CS-3304)
- **Graduate Teaching Assistant** at Virginia Tech Fall 2021 & Spring 2022
  Software Design & Data Structures (CS-2114)