

MARK ROMAN MILLER

Human-Computer Interaction – Virtual and Augmented Reality
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EDUCATION

Ph.D, Human-Computer Interaction, Stanford University, 2016-2023

- *Advisors:* Jeremy Bailenson, James Landay
- *Dissertation Title:* Virtual Reality Tracking Data: Insights, Risks, Opportunities
- *Dissertation Committee:* Jeremy Bailenson, James Landay, Maneesh Agrawala, Nilam Ram

B.S. Computer Science, University of Illinois, 2013-2016

- *Advisors:* David Forsyth, Lawrence Angrave

ACADEMIC POSITIONS

Assistant Professor, Computer Science, Illinois Institute of Technology, 2023-Present

RESEARCH PUBLICATIONS

Miller, Mark Roman, Vivek Nair, Eugy Han, Cyan DeVeaux, Christian Rack, Rui Wang, Brandon Huang, Marc Erich Latoschik, James F O'Brien, and Jeremy N Bailenson (2024). "Effect of Duration and Delay on the Identifiability of VR Motion". In: *2024 IEEE 25th International Symposium on a World of Wireless, Mobile and Multimedia Networks (WoWMoM)*, pp. 70–75. URL: <https://doi.org/10.1109/WoWMoM60985.2024.00023>.

Nair, Vivek, **Mark Roman Miller**, Rui Wang, Brandon Huang, Christian Rack, Marc Erich Latoschik, and James F O'Brien (2024). "Effect of Data Degradation on Motion Re-Identification". In: *2024 IEEE 25th International Symposium on a World of Wireless, Mobile and Multimedia Networks (WoWMoM)*, pp. 85–90. URL: <https://doi.org/10.1109/WoWMoM60985.2024.00026>.

Wang, Portia, **Mark Roman Miller**, Anna C. M. Queiroz, and Jeremy N Bailenson (2024). "Socially Late, Virtually Present: The Effects of Transforming Asynchronous Social Interactions in Virtual Reality". In: *Proceedings of the CHI Conference on Human Factors in Computing Systems (CHI '24)*.

Wang, Portia, **Mark Roman Miller**, Eugy Han, Cyan DeVeaux, and Jeremy N Bailenson (2024). "Understanding virtual design behaviors: A large-scale analysis of the design process in Virtual Reality". In: *Design Studies* 90, p. 101237. URL: <https://doi.org/10.1016/j.destud.2023.101237>.

DeVeaux, Cyan, Dave Markowitz, Eugy Han, **Mark Roman Miller**, Jeff Hancock, and Jeremy N. Bailenson (2024). "Presence and Pronouns: An Exploratory Investigation into the Language of Social VR". In: *Journal of Language and Social Psychology*.

- Miller, Mark Roman** (2024). “Multiclass AUC for Comparison of Identification Effectiveness Across Classification Set Sizes”. In: *2024 IEEE 25th International Symposium on a World of Wireless, Mobile and Multimedia Networks (WoWMoM)*, pp. 97–98. URL: <https://doi.org/10.1109/WoWMoM60985.2024.00028>.
- Akselrad, Daniel, Cyan DeVeaux, Eugy Han, **Mark Roman Miller**, and Jeremy N Bailenson (2023). “Body crumple, sound intrusion, and embodiment violation: Toward a framework for miscommunication in VR”. In: *Companion Publication of the 2023 Conference on Computer Supported Cooperative Work and Social Computing*. Association for Computing Machinery, pp. 121–125. URL: <https://doi.org/10.1145/3584931.3606968>.
- Miller, Mark Roman**, Cyan DeVeaux, Eugy Han, Nilam Ram, and Jeremy Bailenson (2023). “A Large-Scale Study of Proxemics and Gaze in Groups”. In: *Proceedings of the 30th IEEE Conference on Virtual Reality and 3D User Interfaces*.
- Han, Eugy, **Mark R Miller**, Cyan DeVeaux, Hanseul Jun, Kristine L Nowak, Jeffrey T Hancock, Nilam Ram, and Jeremy N Bailenson (2023). “People, places, and time: a large-scale, longitudinal study of transformed avatars and environmental context in group interaction in the metaverse”. In: *Journal of Computer-Mediated Communication* 28.2, zmac031.
- Wang, Portia, **Mark R Miller**, and Jeremy N Bailenson (2023). “The Belated Guest: Exploring the Design Space for Transforming Asynchronous Social Interactions in Virtual Reality (POSTER)”. In: *Proceedings of the 30th IEEE Conference on Virtual Reality and 3D User Interfaces*.
- Queiroz, Anna Carolina Muller, Eileen McGivney, Sunny X. Liu, Courtney Anderson, Brian Beams, Cyan DeVeaux, Kai Frazier, Eugy Han, **Mark Roman Miller**, Xander S. Peterson, Erika S. Woolsey, Jeffrey T. Hancock, and Jeremy N. Bailenson (2023). “Collaborative Tasks in Immersive Virtual Reality Increase Learning”. In: *16th International Conference on Computer-Supported Collaborative Learning*.
- Han, Eugy, **Mark Roman Miller**, Nilam Ram, Kristine L Nowak, and Jeremy N Bailenson (2022). “Understanding Group Behavior in Virtual Reality: A Large-Scale, Longitudinal Study in the Metaverse”. In: *72nd Annual International Communication Association Conference, Paris, France*.
- Miller, Mark Roman**, Neeraj Sonalkar, Ade Mabogunje, Larry Leifer, and Jeremy Bailenson (2021). “Synchrony within Triads using Virtual Reality”. In: *Proceedings of the ACM on Human-Computer Interaction* 5.CSCW2, pp. 1–27.
- Miller, Mark Roman**, Hanseul Jun, and Jeremy N Bailenson (2021). “Motion and Meaning: Sample-Level Nonlinear Analyses of Virtual Reality Tracking Data”. In: *2021 IEEE International Symposium on Mixed and Augmented Reality Adjunct (ISMAR-Adjunct)*. IEEE Computer Society, pp. 147–152.
- Miller, Mark Roman** and Jeremy Bailenson (2021). “Social Presence Outside the Augmented Reality Field of View”. In: *Frontiers in Virtual Reality*, p. 113.
- Mabogunje, Ade, Neeraj Sonalkar, **Mark Miller**, and Jeremy Bailenson (2021). “Design Team Performance: Context, Measurement, and the Prospective Impact of Social Virtual Reality”. In: *Design Thinking Research: Interrogating the Doing*, pp. 177–201.
- Miller, Mark Roman**, Will Gutzman, Jeremy N Bailenson, Ade Mabogunje, and Neeraj Sonalkar (2021). “Capturing Collaboration with Interaction Dynamics Notation”. In: *Design Thinking Research: Translation, Prototyping, and Measurement*, p. 181.

- Miller, Mark Roman**, Fernanda Herrera, Hanseul Jun, James A Landay, and Jeremy N Bailenson (2020). “Personal identifiability of user tracking data during observation of 360-degree VR video”. In: *Scientific Reports* 10.1, pp. 1–10.
- Jun, Hanseul, **Mark Roman Miller**, Fernanda Herrera, Byron Reeves, and Jeremy N Bailenson (2020). “Stimulus sampling with 360-videos: Examining head movements, arousal, presence, simulator sickness, and preference on a large sample of participants and videos”. In: *IEEE Transactions on Affective Computing* 13.3, pp. 1416–1425.
- Sonalkar, Neeraj, Ade Mabogunje, **Mark Miller**, Jeremy Bailenson, and Larry Leifer (2020). “Augmenting learning of design teamwork using immersive virtual reality”. In: *Design Thinking Research: Investigating Design Team Performance*, pp. 67–76.
- Miller, Mark Roman** and Jeremy N Bailenson (2020). “Augmented Reality”. In: *The Handbook of Listening*, pp. 409–417.
- Miller, Mark Roman**, Hanseul Jun, Fernanda Herrera, Jacob Yu Villa, Greg Welch, and Jeremy N Bailenson (2019). “Social interaction in augmented reality”. In: *PLoS one* 14.5, e0216290.
- Choi, Inrak, Heather Culbertson, **Mark R Miller**, Alex Olwal, and Sean Follmer (2017). “Gravity: A Wearable Haptic Interface for Simulating Weight and Grasping in Virtual Reality”. In: *Proceedings of the 30th Annual ACM Symposium on User Interface Software and Technology*. ACM, pp. 119–130. URL: <https://doi.org/10.1145/3126594.3126599>.
- Budhiraja, Pulkit, **Mark Roman Miller**, Abhishek K Modi, and David Forsyth (2017). “Rotation blurring: use of artificial blurring to reduce cybersickness in virtual reality first person shooters”. In: *arXiv preprint arXiv:1710.02599*.

AWARDS AND RECOGNITIONS

Future of Privacy Forum, 2020 Privacy Papers for Policymakers Award, Best Student Paper for *Personal Identifiability of User Tracking Data During Observation of 360-degree VR Video*
 CS Department Student Service Award, Stanford University, 2017, 2018, 2019, 2020
 NSF GRFP Honorable Mention, 2018
 C.W. Gear Outstanding Undergraduate Award, 2016

TEACHING

Illinois Institute of Technology

Biometrics (CS 559), Fall 2023

PhD Student Seminar (CS 695), Spring 2023

Stanford University

Teaching Assistant, Human-Computer Interaction: Foundations and Frontiers, Spring 2022

Teaching Assistant, Virtual People (COMM 166/266), Spring 2018, Fall 2019, Summer 2021

Tutor, Schwab Learning Center, October 2018 – December 2020

Tutor, Athletic Academic Resource Center, Fall 2019

Teaching Assistant, Computer Systems from the Group Up (CS 107E), Winter 2018

Teaching Assistant, Introduction to Game Design and Development (CS 146), Fall 2017

University of Illinois, Urbana-Champaign

Co-instructor, Computer Science Freshman Honors, (CS 196-25) Spring 2016

Course Assistant, Computer Science Freshman Honors, (CS 196-25), Fall 2015

Course Assistant, Computer Architecture (CS 233), Spring 2015 - Summer 2015

SERVICE

Member of VERA (Virtual Experience Research Accelerator) Ethics and Privacy Committee, February 2024-Present

Member of Technical Program Committee, International Workshop on Privacy and Security in Augmented, Virtual, and eXtended Realities, June 2024

Applicant Reviewer through Stanford University Computer Science's Student Applicant Support Program, 2021, 2022.

Graduate Mentor through BIODS 360, Inclusive Mentoring in Data Science, Spring 2021

Graduate Mentor through Summer Undergraduate Research Fellowship (SURF), Summer 2021

Selected Venues Reviewed

CHI (ACM Conference on Human Factors in Computing Systems)

CSCW (ACM Conference on Computer-Supported Cooperative Work and Social Computing)

ICA (International Communication Association)

IMWUT (Proceedings of the ACM on Interactive, Mobile, Wearable, and Ubiquitous Technologies)

ISMAR (International Symposium on Mixed and Augmented Reality)

Journal of Experimental Social Psychology

Scientific Reports

IEEE VR (IEEE Conference on Virtual Reality and 3D User Interfaces)