

Kevin Rio

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Research Experience

Research Scientist	Reality Labs, Meta	Applied Perception Science	2018 - pres.
User Researcher II	Microsoft	Windows Mixed Reality [HoloLens & VR]	2017 - 2018
UX Researcher	Microsoft	Windows 10 [OS & Applications]	2015 - 2017
Graduate Student	Brown University	Virtual Environment Navigation Lab	2009 - 2015
Undergraduate RA	Rensselaer (RPI)	Changizi Lab	2007 - 2009
Undergraduate RA	Rensselaer (RPI)	Center for Terahertz Research	2007

Research Interests

augmented reality; cognitive science; human vision; perception and action; virtual reality

Education

Ph.D.	Cognitive Science, Brown University Advisor: William H. Warren Thesis: "Mapping the visual coupling between neighbors in real and virtual crowds"	2015
M.S.	Cognitive Science, Brown University Advisor: William H. Warren Thesis: "Pedestrian following: Behavioral dynamics and visual information"	2012
B.S.	Psychology, Rensselaer Polytechnic Institute Advisor: Mark A. Changizi Thesis: "Color vision in clinical medicine"	2009
B.S.	Physics, Rensselaer Polytechnic Institute	2009

Publications

Jia J, Chan TT, Lian T, & **Rio KW** (2023). Local pupil swim in virtual and augmented reality: Root cause and perception model. *Journal of the Society for Information Display* 31(5), 230-240. *Distinguished Paper Award.

Wirth TD, Dachner DC, **Rio KW**, & Warren WH (2023). Is the neighborhood of interaction in human crowds metric, topological, or visual? *PNAS Nexus* 2(5), 1-13.

Wilmott J, Erkelens IM, Murdison TS, & **Rio KW** (2022). Perceptibility of jitter in augmented reality head-mounted displays. *Proceedings of the IEEE International Symposium on Mixed and Augmented Reality*.

Rio KW, Dachner GC, Warren WH (2018). Local interactions underlying collective motion in human crowds. *Proceedings of the Royal Society B: Biological Sciences* 285: 20180611.

Kiefer AW, **Rio KW**, Bonneaud S, Walton A, & Warren WH (2017). Quantifying and modeling coordination and coherence in pedestrian groups. *Frontiers in Psychology* 8:949, 1-13.

- Rio KW** & Warren WH (2016). Interpersonal coordination in biological systems: The emergence of collective locomotion. In Passos P, Chow JY, & Davids K (Eds.), *Interpersonal Coordination in Social and Biological Systems*, 3-16. Abingdon: Routledge.
- Rio KW**, Rhea CK & Warren WH (2014). Follow the leader: Visual control of speed in pedestrian following. *Journal of Vision*, 14(2): 4, 1-16.
- Rio KW** & Warren WH (2014). The visual coupling between neighbors in real and virtual crowds. *Transportation Research Procedia* 2, 132-140.
- Changizi MA, Brucksch M, Kotecha R, McDonald K, & **Rio KW** (2014). Ecological warnings. *Safety Science* 61, 36-42.
- Rio KW** & Warren WH (2012). A data-driven model of pedestrian following and emergent crowd behavior. In Weidmann, Kirsch, & Shreckenberg (Eds.), *Pedestrian and Evacuation Dynamics*, 561-574. New York: Springer.
- Bonneaud S, **Rio KW**, Chevallier P, & Warren WH (2012). Accounting for patterns of collective behavior in crowd locomotor dynamics for realistic simulations. *Lecture Notes in Computer Science 7145: Transactions on Edutainment VII*, 1-11.
- Changizi MA & **Rio KW** (2010). Harnessing color vision for visual oximetry in central cyanosis. *Medical Hypotheses* 74, 87-91.

Presentations

- Jia J, Chan TT, Lian T, & **Rio KW** (2023). Local pupil swim in virtual and augmented reality: Root cause and perception model. Talk, Society for Information Display (SID) Display Week, Los Angeles CA.
- Lutwak H, Murdison TS, & **Rio KW** (2023). Retinal slip from self-motion modulates the perceptibility of jitter in world-locked augmented reality. Poster, Vision Sciences Society (VSS) 23rd Annual Meeting, St. Pete Beach FL.
- Wilmott J, Erkelens IM, Murdison TS, & **Rio KW** (2022). Perceptibility of jitter in augmented reality head-mounted displays. Talk, IEEE International Symposium on Mixed and Augmented Reality (ISMAR), Singapore SG.
- Rio KW** & Rufo G (2019). Improving AR/VR Experiences through the Study of Visual Perception. Talk, Oculus Connect 6 Conference, San Jose CA.
- Warren WH & **Rio KW** (2015). The visual coupling between neighbors in a virtual crowd. Talk, International Conference on Perception and Action, Minneapolis MN.
- Rio KW** & Warren WH (2014). Visual coupling to multiple neighbors in a crowd influences walking speed and direction. Poster, Vision Sciences Society 14th Annual Meeting, St. Pete Beach FL.
- Kiefer AW, Bonneaud S, **Rio KW**, & Warren WH (2013). Quantifying the coherence of pedestrian groups. Poster, Cognitive Science Society 35th Annual Meeting, Berlin DE.
- Rio KW** & Warren WH (2013). Visually-guided collective behavior in human swarms. Poster, Vision Sciences Society 13th Annual Meeting, Naples FL.
- Rio KW** (2012). Coordinated locomotion in groups of humans and mobile robots. Poster, Brown University NASA Space Horizons Workshop, Providence RI.
- Rio KW** & Warren WH (2012). A data-driven model of pedestrian following and emergent crowd behavior. Talk, 6th International Conference on Pedestrian and Evacuation Dynamics, Zürich CH.

- Rio KW**, Bonneaud S, & Warren WH (2012). Speed coordination in pedestrian groups: Linking individual locomotion with crowd behavior. Poster, Vision Sciences Society 12th Annual Meeting, Naples FL.
- Rio KW**, & Warren WH (2011). A speed control law for pedestrian following based on visual angle. Poster, Vision Sciences Society 11th Annual Meeting, Naples FL.
- Rio KW**, Bonneaud S, & Warren WH (2010). Locomotion dynamics of multiple pedestrians: Characterizing individual and group behavior. Poster, Psychonomics Society 51st Annual Meeting, St. Louis MO.
- Rio KW**, Rhea C, & Warren WH (2010). Follow the leader: Behavioral dynamics of following. Poster, Vision Sciences Society 10th Annual Meeting, Naples FL.

Shipped Product Impact

Meta Quest 3 (VR/MR Headset)	2023
Meta Quest Pro (VR/MR Headset)	2022
Meta Quest 2 (VR Headset)	2019
Microsoft HoloLens 2 (AR Headset)	2019
Microsoft Windows Mixed Reality (VR Operating System)	2017
Microsoft Windows 10 (PC, Tablet, Phone, & Xbox Operating System)	2015

Mentorship

Hope Lutwak	Research Science Internship, Applied Perception Science, Meta	2022
James Wilmott	Research Science Internship, Applied Perception Science Meta	2021
Rebecca Hornsey	Research Science Internship, Applied Perception Science, Meta	2019
Kirsten Carter	Research Science Internship, Human Factors & Ergonomics, Meta	2018

Fellowships and Grants

Link Foundation Fellowship in Advanced Training and Simulation	2013-2014
Brown University International Affairs Travel Grant	2012
EU Cog II Travel Grant	2011
NASA RI Space Grant Fellowship	2011
Honorable Mention, National Science Foundation Graduate Research Fellowship	2010, 2011
Brown University First Year Fellowship	2009-2010

Professional Development

Member, Society for Information Display (SID)	2023-pres.
Member, Institute of Electrical and Electronics Engineers (IEEE)	2022-pres.
International Summer School: "Dynamic Field Theory: Neural Dynamics Approaches to Cognitive Robotics," University of Minho, Guimarães PT	2011
Member, Vision Sciences Society (VSS)	2009-pres.

Teaching Experience

Graduate TA	Perception, Illusion, and the Visual Arts, Brown University	Spring 2013
Graduate TA	Perception and Mind, Brown University	Spring 2011
Graduate TA	Quantitative Methods in Psychology, Brown University	Fall 2010
Undergraduate TA	Calculus I, Rennselaer Polytechnic Institute	Fall 2008
Undergraduate TA	Physics I, Rennselaer Polytechnic Institute	Spring 2006