

Trenton D. Wirth
Curriculum Vitae
Email: trentondwirth@gmail.com

Employment

Post-Doctoral Researcher

Human Movement Neuroscience Lab (2020-present)
Northeastern University, Department of Biology
Boston, Massachusetts, USA

Co-Founder & COO of The FreeMoCap Foundation

The FreeMoCap Foundation (2021-present)
Boston, Massachusetts, USA

Graduate Student Researcher

Virtual Environment Navigation Lab (2014-2021)
Brown University,
Department of Cognitive, Linguistic and Psychological Sciences
Providence, Rhode Island, USA

Education

Graduate

Ph.D., Cognitive Science (2021)
Brown University
Department of Cognitive, Linguistic and Psychological Sciences
Thesis: *Self-Organization in Human Crowds: The Transition from Averaging to Competition*
Advisor: Dr. William Warren

Undergraduate

B.S. Psychology, *Cum Laude* (2014)
B.A. Philosophy, *Summa Cum Laude* (2014)
University of Cincinnati
College of Arts & Sciences

Research Interests

- Visual Control of Locomotion
- Human Navigation
- Behavioral Dynamics
- Natural Eye Movements

Publications

1. Dachner, G.C., **Wirth, T.D.**, Richmond, E., & Warren, W.H. (2022). A visual model of collective motion in human crowds. *Proceedings of the Royal Society B*, 289(1970), 20212089.
2. **Wirth T.D.** & Warren W.H. (2021). Robust weighted averaging accounts for recruitment into collective motion in human crowds. *Frontiers Applied Math & Statistics*: 73.
3. Weast-Knapp, J. A., Shockley, K., Riley, M. A., Cummins-Sebree, S., Richardson, M. J., **Wirth, T. D.**, & Haibach, P. C. (2019). Perception of another person's maximum reach-with-jump height from walking kinematics. *Quarterly Journal of Experimental Psychology*.
4. Kinaterder, M., **Wirth, T. D.**, & Warren, W. H. (2018). Crowd dynamics in virtual reality. In *Crowd Dynamics, Volume 1* (pp. 15-36). Birkhäuser, Cham.

Manuscripts Under Review, in Revision, or in Preparation

1. **Wirth T.D.**, Dachner, G.C., Rio, K.W., & Warren W.H. (in Review). The neighborhood of interaction in human crowds is neither metric nor topological, but visual
2. **Wirth, T.D.** & Matthis, J.S., (in prep). Terrain complexity and the relationship between gaze and locomotion.
3. **Wirth T.D.**, Free, B.A., & Warren W.H. (in prep). Decision-Making in Human Crowds: Nonlinear Competition Dynamics.

Presentations

Conference Talks

1. **Wirth, T.D.**, Reinhart, S.E., Nguyen, M. & Matthis, J.S., (2022). Terrain complexity and the relationship between gaze and foot placement. *Dynamic Walking*, Madison Wisconsin, June, 2022.
2. **Wirth, T.D.** & Matthis, J.S., (2022) Terrain complexity and the relationship between gaze and locomotion. *Vision Sciences Society*, St. Pete's Beach Florida, May, 2022.
3. **Wirth, T.D.** & Warren, W.H., (2019). *Collective Decision Making in Human Crowds: Majority Rule Emerges From Local Averaging*. *Vision Sciences Society*, St. Pete's Beach Florida, May, 2019.

Poster Presentations

4. Warren, W.H. & **Wirth, T.D.** (2022). A Bifurcation in Visually-Guided Behavior When Following a Crowd. *Vision Sciences Society*, St. Petes Beach Florida, May 16, 2022.
5. Cherian, A.T., **Wirth, T.D.**, Hartigan, K., Queen, P., & Matthis, J.S. *Validating the FreeMoCap Markerless Motion Capture System Using a Balance Assessment Task*. *Rocky Mountain Regional American Society of Biomechanics*, Estes Park Colorado, April, 2022.
6. **Wirth, T.D.**, Free, B.A., & Warren, W.H., (2021). *Decision-Making in Human Crowds: Nonlinear Competition Dynamics*. *Virtual Vision Sciences Society*, May 22, 2021.
7. **Wirth, T.D.**, Dachner, G.C., & Warren, W.H., (2018). *Metric vs. topological models of collective motion in human crowds*. *Vision Sciences Society*, St. Pete's Beach Florida, May 18-23, 2018.
8. **Wirth, T.D.**, Warren, W.H., (2017). *Recruitment of pedestrians into collective crowd motion*. *Pedestrian Dynamics: Modeling, Validation and Calibration at ICERM*, Providence, RI, August 21-25, 2017.
9. **Wirth, T.D.**, Warren, W.H., (2017). *Recruitment of pedestrians into collective crowd motion*. *Vision Sciences Society*, St. Pete's Beach Florida, May 19-24, 2017.

10. **Wirth, T.D.**, Warren, W.H., (2016). *The visual neighborhood in human crowds: Metric vs. topological hypothesis*. Vision Sciences Society, St. Pete's Beach Florida, May 13-18, 2016.

11. **Wirth, T.D.**, Lucas, J., Médé, B., Bonnette, S., & Riley, M.A. (2014) *Role of postural facilitation in auditory localization tasks*. Presented at North American International Society for Ecological Psychology Meeting, Oxford Ohio, June 5-7, 2014.

Other Presentations

12. Warren, W.H., Dachner, G.C., & **Wirth, T.D.** (2020) A visual model of collective motion in human crowds. Invited plenary lecture, Workshop on Collective Information Processing, Humboldt University, Berlin.

13. **Wirth, T.D.** & Warren W.H. (2015) Metric vs. Topological Neighborhoods in Human Crowds, First Year Project Presentation, Brown University, Providence RI.

Teaching Experience

- 2021, Fall Guest Lecturer, "Self-organized Animal Collective Motion",
Locomotion
Northeastern University
Department of Biology
- 2020, Spring Guest Lecturer, "Embodied Perception", Dynamics in Perception &
Action
Brown University
Department of Cognitive, Linguistic and Psychological Sciences
- 2018, Spring Teaching Assistant, Human Cognition
Brown University
Department of Cognitive, Linguistic and Psychological Sciences
- 2018, Spring Guest Lecturer, "Sensation", Human Cognition
Brown University
Department of Cognitive, Linguistic and Psychological Sciences
- 2018, Spring Guest Lecturer, "Perception", Human Cognition
Brown University
Department of Cognitive, Linguistic and Psychological Sciences
- 2017, Spring Teaching Assistant, Elementary Psychology
Brown University

Department of Cognitive, Linguistic and Psychological Sciences

- 2017, Spring Guest Lecturer, “Perception”, Elementary Psychology
Brown University
Department of Cognitive, Linguistic and Psychological Sciences
- 2016, Fall Teaching Assistant, Intro to Cognitive Science
Brown University
Department of Cognitive, Linguistic and Psychological Sciences
- 2016, Fall Guest Lecturer, “Affordances”, Dynamics in Perception & Action
Brown University
Department of Cognitive, Linguistic and Psychological Sciences
- 2015, Fall Teaching Assistant, Social Cognition Lab
Brown University
Department of Cognitive, Linguistic and Psychological Sciences
- 2015, Fall Guest Lecturer, “Animal Collective Behavior”, Social Cognition Lab
Brown University
Department of Cognitive, Linguistic and Psychological Sciences

Grants, Fellowships, and Awards

Received

Link Foundation Fellowship: Modeling Simulation & Training, 2019 – \$29,500

Hyundai Visionary Challenge, Brown University (Fall 2018) Award Recipient -
Pedestrians to Pilots: using virtual reality as a tool for 3D human navigation

Research Assistant of the Year, Psychology Department
University of Cincinnati, 2014

Submitted

Epic MegaGrant, March 2022 – \$22,500
The FreeMoCap Foundation

NIH F32, August 2020 – \$194,790.00
Title: Determining the influence of biomechanics on visual search for
footholds during locomotion over complex terrain

Certifications

2016-17 Sheridan Teaching Certificate I

*The Harriet W. Sheridan Center for Teaching and Learning
Brown University*

2019 Brown Ethics and Responsible Conduct of Research Certificate

*Office of Research Integrity
Brown University*