

**Dr. Benjamin Wolfe**  
University of Toronto Mississauga  
Department of Psychology  
3359 Mississauga Road  
Mississauga, ON, L5L 1C6

benjamin.wolfe@utoronto.ca  
www.applylab.org

## PROFESSIONAL APPOINTMENTS

- 2021 - Assistant Professor  
Department of Psychology, University of Toronto Mississauga  
School of Graduate Studies, University of Toronto  
Co-Director, Applied Perception and Psychophysics Lab (APPLY Lab)
- 2016 - 2020 Postdoctoral Associate, Rosenholtz Lab  
Department of Brain and Cognitive Sciences  
Massachusetts Institute of Technology  
PI: Dr. Ruth Rosenholtz
- 2015 – 2016 Postdoctoral Associate, AgeLab  
Center for Transportation Logistics  
Massachusetts Institute of Technology  
PIs: Dr. Bryan Reimer and Bruce Mehler

## EDUCATION

- 2015 Ph.D., Psychology  
University of California at Berkeley  
Advisor: Professor David Whitney; Cognition, Brain and Behavior Program  
Dissertation: *Before the Eye Moves: Remapping, Visual Stability and Perisaccadic Perception*
- 2008 B.A., Psychology  
Boston University

## RESEARCH INTERESTS

Visual perception; peripheral vision, scene perception, eye movements, visual attention, driving

## RESEARCH FUNDING

- 2022-2024 University of Toronto Connaught Fund - New Researcher Award  
Why don't we notice rare dangerous situations on the road, and what can we do about it?  
\$20,000
- 2022 Adobe Research Award (Jointly awarded to Dr Benjamin Wolfe and Dr Anna Kosovicheva)  
Effects of Highlighting and Underlining on the Visual Mechanisms of Reading  
\$94,750, gift award to APPLY Lab (\$75,000 USD)
- 2021-2026 Natural Sciences and Engineering Research Council (NSERC) Discovery Grant  
Mechanisms of Visual Information Acquisition in Driving  
\$140,000 (\$28,000/year)

- 2021-2026 Natural Sciences and Engineering Research Council (NSERC)  
Early Career Researcher Supplement  
\$12,500
- 2020 Adobe Research Award  
Virtual Reading Laboratory Project  
\$40,000, *gift award to APPLY Lab (\$30,000 USD)*
- 2019 – 2020 Toyota Research Institute - CSAIL Joint Research Program Grant  
“Driver Perception and the Car-to-Driver Handoff”  
PI: Rosenholtz, supporting Benjamin Wolfe  
\$230,000 USD *per year in direct support to Rosenholtz Lab*
- 2016 – 2018 Toyota Research Institute - CSAIL Joint Research Program Grant  
“Reducing the Pain Points in Driving”  
PI: Rosenholtz; supporting Benjamin Wolfe  
\$300,000 USD *per year in direct support to Rosenholtz Lab*
- 2017 Transport Research Laboratories (PI: Rosenholtz)  
“Critical Event Response Thresholds”  
\$20,000 USD (*gift award*)
- 2015 Google Faculty Research Award (PI: Rosenholtz)  
“The role of eye movements in successful navigation during smartphone use”  
\$67,000 USD (*gift award*)
- 2011 – 2014 National Science Foundation Graduate Research Fellowship (GRFP) to Benjamin Wolfe  
\$120,000 USD *in direct support and tuition coverage at UC Berkeley*
- 2005 – 2008 Boston University Undergraduate Research Opportunities Program (UROP)  
\$20,000 USD *in direct support over three years (8 Competitive Renewals)*

## AWARDS AND HONORS

- 2019, 2021 Journal of Vision Exceptional Reviewer Award  
2018 Transportation Review Board; Operations Section Young Author Award  
2015, 2014 UC Berkeley Research Impact Initiative (Open Access Publication)  
2015 UC Berkeley Psychology Department Travel Award  
2014, 2013 UC Berkeley Graduate Division Travel Award

## PUBLISHED PAPERS AND ARTICLES

1. (in press) Kosovicheva, A., Wolfe, J.M., **Wolfe, B.**, Taking Prevalence Effects on the Road: Rare hazards are often missed; *Psychonomic Bulletin and Review*
2. (2022) Wolfe, J.M., Kosovicheva, A., **Wolfe, B.**, Normal Blindness – When we look but fail to see; *Trends in Cognitive Science*
3. (2022) Vater, C., **Wolfe, B.A.**, Rosenholtz, R., Peripheral vision in action: A systematic review on functionality discussions in driving, walking and aviation – a relation to sports; *Psychonomic Bulletin and Review*

4. (2021) **Wolfe, B.A.**, Kosovicheva, A., Stent, S., Rosenholtz, R., Effects of Temporal and Spatiotemporal Cues on Detection of Dynamic Road Hazards. *Cognitive Research: Principles and Implications*
5. (2021) Nyström, M., Ahlström, C., Kircher, K., **Wolfe, B.**, Eye tracking in driver attention research - how gaze data interpretations influence what we learn. *Frontiers in Neuroergonomics*.
6. (2021) Beier, S., Berlow, S., Boucaud, E., Bylinskii, Z., Cai, T., Cohn, J., ... & **Wolfe, B.** Readability Research: An Interdisciplinary Approach. *arXiv preprint arXiv:2107.09615*
7. (2020) **Wolfe, B. A.**, Sawyer, B., Rosenholtz, R., Towards a Theory of Visual Information Acquisition in Driving. *Human Factors*.
8. (2020) Sawyer, B., **Wolfe, B.**, Dobres, J., Chahine, N., Mehler, B., Reimer, B., Glanceable Legible Typography over Complex Backgrounds. *Ergonomics*.
9. (2019) **Wolfe, B. A.**, Seppelt, B., Mehler, B., Reimer, B., Rosenholtz, R., Rapid Detection and Localization of Road Hazards. *Journal of Experimental Psychology: General*.
10. (2019) **Wolfe, B. A.**, Sawyer, B., Kosovicheva, A., Reimer, B., Rosenholtz, R., Detection of Brake Lights While Distracted: Separating Peripheral Vision from Cognitive Load. *Attention, Perception and Psychophysics*.
11. (2019) **Wolfe, B. A.**, Fridman, L. Kosovicheva, A., Seppelt, B., Mehler, B., Reimer, B., Rosenholtz, R., Predicting Road Events from Brief Views of Driving Video. *Journal of Vision*. 19(5), 8-8
12. (2018) **Wolfe, B.A.**, Rosenholtz, R., Peripheral Vision, Models Of. *Encyclopedia of Cognitive Neuroscience*.
13. (2018) Dobres, J., **Wolfe, B.**, Chahine, N., Reimer, B. The Effects of Visual Crowding, Text Size, and Positional Uncertainty on Text Legibility at a Glance. *Applied Ergonomics*. 70, 240-246
14. (2018) Chen, Z., Kosovicheva, A., **Wolfe, B.**, Cavanagh, P., Gorea, A., Whitney, D. Unifying Visual Space Across the Right and Left Hemifields. *Psychological Science*. 9(3), 356-369
15. (2017) **Wolfe, B.A.**, Dobres, J., Rosenholtz, R., & Reimer, B. More Than the Useful Field: Considering Peripheral Vision in Driving. *Applied Ergonomics*. 65, 316-325
16. (2017) **Wolfe, B.**, Fridman, L., Kosovicheva, A., Seppelt, B., Mehler, B., Reimer, B. Perceiving The Roadway In The Blink Of An Eye – Rapid Perception Of The Road Environment And Prediction Of Events. *Conference Proceedings, Driving Assessment 2017*.
17. (2017) Dobres, J., Chrysler, S. T., **Wolfe, B.**, Chahine, N., & Reimer, B. Signs of the Times: An Empirical Assessment of the Legibility of Highway Gothic and Clearview Signage Fonts. In *Transportation Research Board 96th Annual Meeting* (No. 17-04920). *Won Operations Section Young Author Award from Transportation Review Board*.
18. (2016) **Wolfe, B.**, Dobres, J., Kosovicheva, A., Rosenholtz, R., Reimer, B., Age-related differences in the legibility of degraded text. *Cognitive Research: Principles and Implications*. 1(1), 22
19. (2015) **Wolfe, B. A.**, Whitney, D. Saccadic remapping of object-selective information. *Attention, Perception and Psychophysics*. 77:7, 2260-2269.
20. (2015) **Wolfe, B. A.**, Kosovicheva, A. A., Leib, A. Y., Wood, K. Whitney, D. Foveal input is not required for ensemble perception of emotional faces. *Journal of Vision*. 15(4), 11-11.

21. (2014) Kosovicheva, A. A., **Wolfe, B. A.**, Whitney, D. Visual motion shifts saccade targets. *Attention, Perception, & Psychophysics*, 1-11.
22. (2014) **Wolfe, B. A.**, Whitney, D. Facilitating recognition of crowded faces with presaccadic attention. *Frontiers in Human Neuroscience*. 8:103
23. (2010) **Wolfe, B.A.**, Rushmore, R.J., Valero-Cabre, A. Coping With Spatial Attention in Real Space: A Low-Cost Portable Testing System for the Investigation of Visuo-Spatial Processing in the Human Brain. *Journal of Neuroscience Methods*. 187(2):190-8.
24. (2010) Swisher, J.D., Gatenby, J.C., Gore, J.C., **Wolfe, B.A.**, Moon, C.H., Kim, S.G., Tong., F.. Multiscale pattern analysis of orientation-selective activity in the primary visual cortex. *Journal of Neuroscience*. 30(20):6811-2.

## MANUSCRIPTS IN REVISION

Beier, S., Berlow, S., Boucaud, E., Bylinskii, Z., Cai, T., Cohn, J., ... & **Wolfe, B.** Readability Research: An Interdisciplinary Approach. *Foundations and Trends in Human-Computer Interaction*

## SELECTED CONFERENCE PRESENTATIONS (student presenters underlined)

1. (submitted) Song, J., Kosovicheva, A., Wolfe, B. You'll still miss the moose on the road: Rare hazards are frequently missed even when they are perceived as highly dangerous. *Abstract submitted to the Object Perception Attention and Memory (OPAM) meeting*.
2. (2022) Hart, J.A., McGlashan, C., **Wolfe, B.**, Greene, M.R. You know the situation is dangerous within 100 ms: Neural signatures of road hazard detection; *Poster presentation, Vision Sciences Society 2022*
3. (2022) Guidi, S., Ghuman, C., Kosovicheva, A., **Wolfe, B.**, Effects of Blur on Duration Thresholds for Road Hazard Detection; *Poster presentation, Vision Sciences Society 2022*
4. (2022) Haseeb, Z., **Wolfe, B.**, Kosovicheva, A. Spatial Heterogeneity in Localization Biases Predicts Crowding Performance; *Poster presentation, Vision Sciences Society 2022*
5. (2022) Kosovicheva, A., Wolfe, J.M., **Wolfe, B.**, The Moose Came Out of Nowhere: Low Prevalence Effects in Road Hazard Detection; *Talk presentation, Vision Sciences Society 2022*
6. (2021) Kosovicheva, A., Wolfe, J.M., **Wolfe, B.** Taking Prevalence Effects on the Road: Rare Hazards are Often Missed. *Poster Presentation, Psychonomic Society Annual Meeting*
7. (2021) Kanda, S. (advisors: Kosovicheva, A., Wolfe, J.M., **Wolfe, B.**) Prevalence effects on the road: rare hazards are often missed. *Presented at V-VSS 2021 (undergraduate just-in-time session)*
8. (2021) **Wolfe, B.A.**, Kosovichvea, A., Stent, S., Rosenholtz, R., Attentional Cueing in the World: Temporal and Spatiotemporal Cues for Road Hazards. *Presented at V-VSS 2021*.
9. (2022) **Wolfe, B.A.** Eye Movements and Information Acquisition. International Conference on Traffic and Transport Psychology (ICTTP), August 24-26, 2022 (*postponed from 2020 due to COVID-19*)
10. (2020) **Wolfe, B.A.**, Rosenholtz, R., Understanding dynamic scenes: How driving can teach us about scene perception. Vision Sciences Society Annual Meeting. *Presented virtually at V-VSS, June 19-24, 2020, due to COVID-19*.

11. (2020) Hernandez, C.I., Rahill, K., Pham, M., Manriquez, L., Louis, P., Figueroa, A., Medina, B., **Wolfe, B.**, Sawyer, B.D., Prevalence effects are not driving hazard detection on the road. Vision Sciences Society Annual Meeting, May 15-20, 2020. *Presented virtually at V-VSS, June 19-24, 2020, due to COVID-19.*
12. (2019) **Wolfe, B.A.**, Rosenholtz, R., Why Uber Drivers Scare You: Detecting Road Hazards With Peripheral Vision. Vision Sciences Society Annual Meeting May 17-22, 2019.
13. (2018) **Wolfe, B.A.**, Rosenholtz, R., Was that a moose on the road? Gist-like perception of emerging driving hazards. Vision Sciences Society Annual Meeting, May 18-23, 2018.
14. (2017) **Wolfe, B.A.**, Fridman, L., Kosovicheva, A.A., Reimer, B. & Rosenholtz, R. Seeing the road in the blink of an eye - rapid perception of the driver's visual environment. Vision Sciences Society Annual Meeting, May 19–24, 2017.
15. (2017) Rosenholtz, R., **Wolfe, B.A.**, Sawyer, B., Kosovicheva, A.A. & Reimer, B. Perceptual and attentional factors in detection of driving-relevant visual events. Vision Sciences Society Annual Meeting, May 19–24, 2017.
16. (2016) **Wolfe, B.A.**, Dobres, J., Kosovicheva, A.A., Rosenholtz, R., Reimer, B. Reduction in Legibility with Degradation in Older and Younger Observers. Vision Sciences Society Annual Meeting, May 13–18, 2016.
17. (2015) **Wolfe, B.A.**, Whitney, D. Object-selective processing of remapped information. Vision Sciences Society Annual Meeting. May 15–20, 2015.
18. (2015) Kosovicheva, A. A., **Wolfe, B.A.**, Cavanagh, P., Gorea, A., Whitney, D. Dynamic recalibration of perceived space across the visual hemifields. Vision Sciences Society Annual Meeting. May 15–20, 2015.
19. (2015) Wood, K., **Wolfe, B. A.**, Kosovicheva, A. A., Whitney, D. Speeded breakthrough of faces in interocular suppression requires configural information. Vision Sciences Society Annual Meeting. May 15–20, 2015.
20. (2014) **Wolfe, B.A.**, Whitney, D. Presaccadic Induction and Spatial Tuning of the Face Aftereffect. Vision Sciences Society Annual Meeting. May 16–21, 2014.
21. (2014) Wood, K., **Wolfe, B. A.**, Kosovicheva, A. A., Leib, A. Y., Whitney, D. Foveal input is not required for ensemble coding of emotional faces. Vision Sciences Society Annual Meeting. May 16–21, 2014.
22. (2013) **Wolfe, B. A.**, Kosovicheva, A. A., Leib, A. Y., Whitney, D. Beyond fixation: Ensemble coding and eye movements. Vision Sciences Society Annual Meeting. May 10–15, 2013.
23. (2012) Kosovicheva, A. A., **Wolfe, B.A.**, Whitney, D. Effects of motion-induced mislocalizations on saccade landing position. Vision Sciences Society Annual Meeting. May 11–16, 2012.
24. (2012) **Wolfe, B.A.**, Whitney, D. Presaccadic foveal priming diminishes crowding. Vision Sciences Society Annual Meeting. May 11–16, 2012.
25. (2011) **Wolfe, B.A.**, Whitney, D. Egocentric but not allocentric perceptual distortions from saccadic adaptation. Vision Sciences Society Annual Meeting. May 6–11, 2011.

26. (2008) **Wolfe, B.A.**, Rowe, C.K., Rushmore, R.J., Valero-Cabre, A. Spatial distribution and temporal dynamics of visuo-spatial attention capabilities in human subjects as revealed by transcranial magnetic stimulation (TMS) on parietal systems and associated networks. Twelfth International Conference on Cognitive and Neural Systems. May 14-17, 2008.

#### **INVITED TALKS AND SEMINARS** (\* denotes delivered remotely due to COVID-19)

1. Autonomous Vehicles Workshop (AI-CRV Conference), May 30, 2022\*
2. Rotman Rounds, Rotman Research Institute at Baycrest, February 7, 2022\*
3. University of Toronto, Ebbinghaus Empire Talk Series, October 27, 2021\*
4. KITE, University Health Network, Toronto ON, June 22, 2021\*
5. Huawei Canada, Human-Machine Interaction Workshop, May 28, 2021\*
6. Huawei Canada, Human-Machine Interaction Group, March 24, 2021\*
7. Brandeis University, Department of Psychology, March 11, 2021\*
8. Human Factors Interest Group, University of Toronto, February 21, 2021\*
9. Boston University, Department of Biomedical Engineering, November 9, 2020\*
10. University of Toronto, Department of Mechanical and Industrial Engineering, November 3, 2020\*
11. University of Iowa, Department of Psychology, October 23, 2020\*
12. University of California at Berkeley, Department of Psychology, July 13, 2020\*
13. University of Indiana – Bloomington, School of Optometry, March 31, 2020\*
14. University of Toronto Mississauga, Department of Psychology, January 21, 2020
15. Toyota Research Institute, Cambridge MA, May 13, 2019
16. New England College of Optometry, Boston MA, April 16, 2019
17. Schepens Eye Research Institute, Boston MA, August 29, 2018
18. Tufts University, Department of Psychology, January 25, 2018

#### **MENTORSHIP & RESEARCH SUPERVISION**

##### **Postdoctoral Fellows**

2022 - Dr Jiali Song

##### **Graduate Students**

2022 - Greer Gilles (external PhD project, co-supervised with A. Kosovicheva)

##### **Undergraduate Students** (\* denotes honors thesis supervision)

###### *University of Toronto Mississauga (2021-present)*

Chandandeep Ghuman, Cristeidy Gonzalez, Silvia Guidi, Zainab Haseeb\*, Simran Kanda, Zoey Khaled, Meghna Patil, Sanaullah Pirzada, Mia Romano, Dyllan Simpson

###### *Massachusetts Institute of Technology (2015-2020)*

Riley Ledezma, Martin Lopez

###### *University of California at Berkeley (2010-2015)*

Claire Jeon, Omead Kohanteb, Katherine Wood\*

##### **High School Students**

###### *Massachusetts Institute of Technology*

Sohan Subhash, Yrvine Thelusma

## TEACHING EXPERIENCE

Department of Psychology, University of Toronto Mississauga

Winter 2022 *Systems of Psychology (4<sup>th</sup> year seminar)*

Average student evaluation: 4.2 (department mean, 4.1 / 5)

Summer 2021 *Cognitive Psychology (2<sup>nd</sup> year lecture course)*

Average student evaluation: 4.6 (department mean, 4.2 / 5)

Graduate Student Instructor, UC Berkeley (Teaching Assistant)

Spring 2015 *Mind, Brain and Behavior*

Average student evaluation: 5.97 (department mean, 5.92 / 7)

Spring 2011 *Sensation and Perception*

Average student evaluation: 6.33 (department mean, 6.27 / 7)

Fall 2010 *Drugs and the Brain*

Average student evaluation: 6.09 (department mean, 6.32 / 7)

## SERVICE

Fall 2021 Organizer, UTM Psychology “Careers in Cognitive Psychology” Panel Series

2021 Departmental PTR Committee Member

2018 – Present Vision Sciences Society Demo Night Committee Member

2017 – 2020 Member, Ad-Hoc Working Group on NIH Clinical Trials Policy for Basic Science

## ADDITIONAL TRAINING

2008 - 2010 Research Associate, Tong Lab  
Department of Psychology, Vanderbilt University  
Supervisor: Dr. Frank Tong

2005 – 2008 Research Assistant, Cerebral Dynamics Laboratory  
Department of Anatomy and Neurobiology, Boston University Medical School  
Advisors: Dr. R. Jarrett Rushmore and Dr. Antoni Valero-Cabré

## REVIEWING EXPERIENCE

Journals: Attention, Perception and Psychophysics; Vision Research; Journal of Vision\*; Journal of Experimental Psychology: General; iPerception; Experimental Brain Research; Behavioral Research Methods; Translational Vision Science and Technology; Visual Cognition, Cognitive Science; Cognitive Processing, Experimental Psychology; Cognitive Research, Principles and Implications; Scientific Reports (Nature); PLOSone; Human Factors; Ergonomics; Applied Ergonomics; International Journal of Occupational Safety and Ergonomics; Traffic, Injury and Prevention; Accident, Analysis and Prevention; Transactions on Intelligent Transportation Systems

\*Exceptional Reviewer Award (2019, 2021)

Conferences: IEEE Visualization and Graphics Technical Committee (VGTC), Driving Assessment, IEEE Information Visualization (InfoVis), NeurIPS/NIPS, AutomotiveUI

Agencies: US-Israel Binational Science Foundation  
National Sciences and Engineering Research Council of Canada (NSERC)

## EDITORIAL EXPERIENCE

2021 – Digital Associate Editor, Psychonomic Society

## COMMUNITY OUTREACH AND PRESENTATIONS

2010 – 2015 Whitney Lab K-12 Outreach Program

2014 Vision Sciences Society Demo Night Presenter, “Strobowheel”

2012 Vision Sciences Society Demo Night Presenter, “An Aftereffect Based on Texture Element Ratios”

## PROFESSIONAL MEMBERSHIPS

2022 Human Factors and Ergonomics Society  
2009 – Present Vision Sciences Society  
2014 – Present Psychonomics Society

## REFERENCES

### **Ruth Rosenholtz, Ph.D.**

Principal Research Scientist  
Department of Brain and Cognitive Sciences  
Massachusetts Institute of Technology  
77 Massachusetts Ave, 32-D426  
Cambridge, MA, 02139  
rruth@mit.edu

### **David Whitney, Ph.D.**

Professor, Department of Psychology  
University of California at Berkeley  
2121 Berkeley Way  
University of California, Berkeley  
Berkeley, CA 94720-1650  
dwhitney@berkeley.edu

### **Ben D. Sawyer, Ph.D., MSIE**

Associate Professor  
Department of Industrial Engineering and Management Systems  
University of Central Florida  
4000 Central Florida Blvd.  
Orlando, FL 32817  
sawyer@ucf.edu