Revised, May 29, 2019

Benjamin Wolfe, Ph.D.

Curriculum Vitae

Massachusetts Institute of Technology
Computer Science and Artificial Intelligence Lab (CSAIL)
77 Massachusetts Avenue, 32-D540
Cambridge, MA, 02139
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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

PROFESSIONAL APPOINTMENTS

2016 - Postdoctoral Associate, Rosenholtz Lab
Department of Brain and Cognitive Sciences
Massachusetts Institute of Technology
Advisor: Dr. Ruth Rosenholtz

2015 – 2016 Postdoctoral Associate, AgeLab
Center for Transportation Logistics
Massachusetts Institute of Technology
Advisors: Dr. Bryan Reimer and Bruce Mehler

RESEARCH INTERESTS

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

GRANTS AND FELLOWSHIPS

2019 TRI-CSAIL Joint Research Program Grant
"Driver Perception and the Car-to-Driver Handoff"
PI: Rosenholtz, supporting Benjamin Wolfe
$230,000 in total support for 2019

2016 – 2018 TRI-CSAIL Joint Research Program Grant
"Reducing the Pain Points in Driving"
PI: Rosenholtz; supporting Benjamin Wolfe
$300,000 per year in direct support to Rosenholtz Lab

2017 Transport Research Laboratories (via CSAIL Alliances)
"Critical Event Response Thresholds"
$20,000 in direct support (gift award)

2015 Google Faculty Research Award
"The role of eye movements in successful navigation during smartphone use"
PI: Rosenholtz
$67,000 in direct support (gift award)

2011 – 2014 Graduate Research Fellowship to Benjamin Wolfe
National Science Foundation
$120,000 in direct support and tuition coverage

2005 – 2008 Undergraduate Research Opportunities Program (UROP)
Boston University; 8 Competitive Renewals
$20,000 in direct support over three years

AWARDS AND HONORS

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

MANUSCRIPTS IN REVISION

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.*

Wolfe, B. A., Seppelt, B., Mehler, B., Reimer, B., Rosenholtz, R., Rapid Detection and Localization of Road Hazards. *Journal of Experimental Psychology: General.*

Wolfe, B. A., Sawyer, B., Rosenholtz, R., Towards a Mechanistic Understanding of Situational Awareness in Driving. *Human Factors.*

MANUSCRIPTS IN PREPARATION

Sawyer, B., **Wolfe, B. A.**, Dobres, J., The Science of Style: Design Guidelines for Legible Typography in Conventional and Augmented Reality (AR) Interface

Sawyer, B., **Wolfe, B. A.**, Dobres, J., Chahine, N., Mehler, B., Reimer, B., Better Bakery Windows: Toward Glanceable, Legible Typography over Complex Backgrounds.

Kosovicheva, A., **Wolfe, B. A.**, & Whitney, D., Position representations for action lead perception: Evidence from saccades to drifting Gabor targets

PUBLISHED PAPERS AND ARTICLES

(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*

(2018) **Wolfe, B.A.**, Rosenholtz, R., Peripheral Vision, Models Of. *Encyclopedia of Cognitive Neuroscience*.

(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

(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

(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

(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.*

(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.*

(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

(2015) **Wolfe, B. A.**, Whitney, D. Saccadic remapping of object-selective information. *Attention, Perception and Psychophysics.* 77:7, 2260-2269.

(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.

(2014) Kosovicheva, A. A., **Wolfe, B. A.,** & Whitney, D. Visual motion shifts saccade targets. *Attention, Perception, & Psychophysics*, 1-11.

(2014) **Wolfe, B. A.**, Whitney, D. Facilitating recognition of crowded faces with presaccadic attention. *Frontiers in Human Neuroscience*. 8:103

(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.

(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.

TEACHING EXPERIENCE

Spring 2015 Mind, Brain and Behavior, Graduate Student Instructor
Departments: Psychology; Molecular and Cellular Biology
Average student evaluation: 5.97 (department mean, 5.92 / 7)

Spring 2011 Sensation and Perception, Graduate Student Instructor
Department: Psychology
Average student evaluation: 6.33 (department mean, 6.27 / 7)

Fall 2010 Drugs and the Brain; Graduate Student Instructor
Departments: Psychology and Molecular/Cell Biology
Average student evaluation: 6.09 (department mean, 6.32 / 7)

MENTORING EXPERIENCE

2017 Sohan Subhash, High School Student in Rosenholtz Lab

2017 Yrvine Thelusma, High School Student in Rosenholtz Lab

2015 Martin A Lopez, MIT, Aeronautics and Astronautics Undergraduate
Completed Senior Project in AgeLab

2015 Riley Ledezma, MIT, Aeronautics and Astronautics Undergraduate
Completed Senior Project in AgeLab

2013-2015 Katherine Wood, Undergraduate Student, UC Berkeley
Completed Honors Thesis in Psychology

2013 Omead Kohanteb, Undergraduate Student, UC Berkeley

2012 Claire Jeon, Undergraduate Student, UC Berkeley

SERVICE

2018 – Present Vision Sciences Society Demo Night Committee Member

2017 – Present 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 Experimental Psychology: General; Cognitive Science; Human Factors; Traffic, Injury and Prevention; Experimental Psychology; Cognitive Research, Principles and Implications; Ergonomics; Applied Ergonomics

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

Agencies: US-Israel Binational Science Foundation

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”

GUEST LECTURES AND INVITED TALKS

(2019) Reconsidering the Mechanisms of Situation Awareness in Driving
Toyota Research Institute, May 13, 2019

(2019) Using Driving to Understand Vision
New England College of Optometry, April 16, 2019

(2018) Information Acquisition for Driving
Schepens Eye Research Institute, August 29, 2018

(2018) Visual Attention in Driving
Tufts University, Department of Psychology, January 25, 2018

SELECTED CONFERENCE PRESENTATIONS

(2019) **Wolfe, B.A.**, Rosenholtz, R. Why Uber Drivers Scare You: Detecting Road Hazards With Peripheral Vision. Vision Sciences Society Annual Meeting 2019.

(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.

(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.

(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.

(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.

(2015) **Wolfe, B.A.**, Whitney, D. Object-selective processing of remapped information. Vision Sciences Society Annual Meeting. May 15–20, 2015.

(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.

(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.

(2014) **Wolfe, B.A.,** Whitney, D. Presaccadic Induction and Spatial Tuning of the Face Aftereffect. Vision Sciences Society Annual Meeting. May 16–21, 2014.

(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.

(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.

(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.

(2012) **Wolfe, B.A.,** Whitney, D. Presaccadic foveal priming diminishes crowding. Vision Sciences Society Annual Meeting. May 11–16, 2012.

(2011) **Wolfe, B.A.,** Whitney, D. Egocentric but not allocentric perceptual distortions from saccadic adaptation. Vision Sciences Society Annual Meeting. May 6–11, 2011.

(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.

PROFESSIONAL MEMBERSHIPS

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
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