

# Emily Cooper

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CONTACT	emily.a.cooper@dartmouth.edu www.emilyacooper.org 603.646.9022	
APPOINTMENTS	<b>Dartmouth College</b> <i>Assistant Research Professor, Psychological and Brain Sciences</i> <i>Adjunct Assistant Professor, Computer Science</i>	<b>2015 – present</b> <i>2015 – present</i> <i>2016 – present</i>
	<b>Stanford University</b> <i>Postdoctoral Research Scholar, Psychology</i> (Advisor: Anthony Norcia)	<b>2013 – 2015</b>
EDUCATION	<b>University of California, Berkeley</b> <i>Ph.D., Neuroscience</i> Dissertation: Perception of Depth in Real and Pictured Environments (Advisor: Martin Banks)	<b>2007 – 2012</b>
	<b>University of Chicago</b> <i>B.A., Psychology and English Language &amp; Literature (Phi Beta Kappa)</i>	<b>2003 – 2007</b>
RESEARCH FUNDING	Intel Light Field Display ISRA Program, Unrestricted Gift (with G. Wetzstein) Oculus, Unrestricted Gift Samsung GRO, Monovision and Focus-tunable Near-eye Displays (co-PI, with G. Wetzstein) Microsoft, Augmenting Reality for the Visually Impaired (PI, with W. Jarosz and X.-D. Yang) National Science Foundation, Graduate Research Fellowship Dept of Defense, National Defense Science & Engineering Graduate Fellowship	2017 2017 2016 2015 2011 2009
AWARDS	NVIDIA, Academic GPU Award Stanford University, Henzl-Gabor Young Women in Science Travel Award ARVO, Vision Sciences Society Student Travel Award UC Berkeley, Outstanding Graduate Student Teaching Award HHMI, Undergraduate Research Fellowship	2016 2013 2012 2009 2006
ARTICLES	N. Padmanaban, R. Konrad, T. Stramer, E.A. Cooper, and G. Wetzstein. Optimizing Virtual Reality for All Users Through Gaze Contingent and Adaptive Focus Displays. <i>Proceedings of the National Academy of Sciences</i> , 2017 (in press)  E.A. Cooper, M. van Ginkel, and B. Rokers. Sensitivity and Bias in the Discrimination of 2D and 3D Motion Direction. <i>Journal of Vision</i> , 16(10):5, 2016  W.W. Sprague, E.A. Cooper, S. Reissier, B. Yellapragada, and M.S. Banks. The Natural Statistics of Blur. <i>Journal of Vision</i> , 16(10):23, 2016  E.A. Cooper and A.P. Mackey. Sensory and Cognitive Plasticity: Implications for Academic Interventions. <i>Current Opinion in Behavioral Sciences</i> , 10, 21-27, 2016  E.A. Cooper. A Normalized Contrast-encoding Model Exhibits Bright/dark Asymmetries Similar to Early Visual Neurons. <i>Physiological Reports</i> , 4(7), e12746, 2016	

R. Konrad, E.A. Cooper, and G. Wetzstein. Novel Optical Configurations for Virtual Reality: Evaluating User Preference and Performance with Focus-tunable and Monovision Near-eye Displays. *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI)*, 2016

E.A. Cooper and A. Radonjic. Gender Representation in the Vision Sciences: a Longitudinal Study. *Journal of Vision*, 16(1):17, 2016

E.A. Cooper and H. Farid. Does the Sun Revolve Around the Earth? A Comparison between the General Public and On-line Survey Respondents in Basic Scientific Knowledge. *Public Understanding of Science*, 25(2): 146-153, 2016

W.W. Sprague\*, E.A. Cooper\*, I. Tomic and M.S. Banks. Stereopsis is Adaptive for the Natural Environment. *Science Advances*, 1(4), e1400254, 2015 \*Author order determined by coin toss

E.A. Cooper and A.M. Norcia. Predicting Cortical Dark/Bright Asymmetries from Natural Image Statistics and Early Visual Transforms. *PLOS Computational Biology*, 11(5), e1004268, 2015

D.E. Jacobs, O. Gallo, E.A. Cooper, K. Pulli, and M. Levoy. Simulating the Visual Experience of Very Bright and Very Dark Scenes. *ACM Transactions on Graphics*, 34(3): 25, 2015

E.A. Cooper and A.M. Norcia. Perceived Depth in Natural Images Reflects Encoding of Low-level Luminance Statistics. *Journal of Neuroscience*, 34(35), 11761-8, 2014

M.S. Banks, E.A. Cooper, and E.A. Piazza. Camera Focal Length and the Perception of Pictures. *Ecological Psychology*, 26(1-2), 30-46, 2014

E.A. Cooper, H. Jiang, V. Vildavski, J.E. Farrell, and A.M. Norcia. Assessment of OLED Displays for Vision Research. *Journal of Vision*, 13(12):16, 1-13, 2013

P. Vangorp, C. Richardt, E.A. Cooper, G. Chaurasia, M.S. Banks, and G. Drettakis. Perception of Perspective Distortions in Image-Based Rendering. *ACM Transactions on Graphics (SIGGRAPH Conference Proceedings)*, 32(4), 58:1-12, 2013

E.A. Cooper, E.A. Piazza, and M.S. Banks. The Perceptual Basis of Common Photographic Practice. *Journal of Vision*, 12(5):8, 1-14, 2012

R.T. Held, E.A. Cooper, and M.S. Banks. Blur and Disparity are Complementary Cues to Depth. *Current Biology*, 22(5), 2012

E.A. Cooper, J. Burge, and M.S. Banks. The Vertical Horopter is not Adaptable, but It may be Adaptive. *Journal of Vision*, 11(3):20, 1-19, 2011

E.A. Cooper, U. Hasson, and S.L. Small. Interpretation-Mediated Changes in Neural Activity During Language Comprehension. *NeuroImage*, 55(3): 1314-23, 2011

R.T. Held, E.A. Cooper, J. O'Brien, and M.S. Banks. Using Blur to Affect Perceived Distance and Size. *ACM Transactions on Graphics*, 29(2): 1-16, 2010

#### ABSTRACTS

M. Kinader, T. Pfaff, and E.A. Cooper. The Visual Features of Smoke. *Journal of Vision*, 2017 (in press)

R. Konrad, N. Padmanaban, E.A. Cooper, and G. Wetzstein. Computational Focus-Tunable Near-Eye Displays. *SIGGRAPH Emerging Technologies*, 3, 2016

M.S. Banks, W.W. Sprague, E.A. Cooper, and S. Reissier. How Natural Distributions of Blur Affect 3D Percepts. *Journal of Vision*, 16(12): 195, 2016

- E.A. Cooper and A.M. Norcia. What are the Natural Scene Statistics of Cortical Input? *Journal of Vision*, 15(12): 1287, 2015
- W.W. Sprague, E.A. Cooper and M.S Banks. Statistics of Retinal Image Blur During Natural Viewing. *Journal of Vision*, 15(12): 766, 2015
- E.A. Cooper and A.M. Norcia. Perceived Depth in Natural Images Reflects Encoding of Low-Level Luminance Statistics. *Journal of Vision*, 14(10): 1112, 2014
- W.W. Sprague, E.A. Cooper, J.-B. Durand, and M.S. Banks. Disparity Preferences in V1 Reflect the Statistics of Disparity in Natural Viewing. *Journal of Vision*, 14(10): 1111, 2014
- A.M. Norcia, J.M. Ales, E.A. Cooper, and T. Weigand. Measuring Perceptual Differences between Compressed and Uncompressed Video Sequences using the Swept-Parameter Visual Evoked Potential. *Journal of Vision*, 14(10): 649, 2014
- J. Yang, M. Andric, S. Duncan, A. Holt, U. Hasson, E.A. Cooper, and S.L. Small. Top-Down Modulation of Brain Networks During Discourse Comprehension. *Society for the Neurobiology of Language*, San Diego, CA, 2013
- E.A. Cooper, W.W. Sprague, I. Tomic, and M.S. Banks. Is Stereopsis Optimized for the Natural Environment? *Journal of Vision*, 13(9): 612, 2013
- J. Yang, U. Hasson, E.A. Cooper, and S.L. Small. Influence of Selective Attention on Story Comprehension. *Cognitive Neuroscience Society Annual Meeting*, San Francisco, CA, 2013
- E.A. Cooper and M.S. Banks. Perception of Depth in Pictures when Viewing from the Wrong Distance. *Journal of Vision*, 12(9): 896, 2012
- E.A. Cooper, E.A. Piazza, and M.S. Banks. Depth Compression and Expansion in Photographs. *Journal of Vision*, 11(11): 65, 2011
- E.A. Cooper, J. Burge, and M.S. Banks. Do People of Different Heights Have Different Horopters? *Journal of Vision*, 10(7): 372, 2010
- R.T. Held, E.A. Cooper, and M.S. Banks. Blur and Disparity Provide Complementary Distance Information for Human Vision. *Journal of Vision*, 10(7): 57, 2010
- R.T. Held, E.A. Cooper, J. O'Brien, and M.S. Banks. Making Big Things Look Small: Blur Combined With Other Depth Cues Affects Perceived Size and Distance. *Journal of Vision*, 9(8): 959, 2009
- E.A. Cooper, U. Hasson, and S.L. Small. Dimensions of Discourse: Brain Activation During the Processing of Temporal, Spatial, and Actional Information in Narrative. *Cognitive Neuroscience Society Annual Meeting*, New York, NY, 2007

INVITED TALKS

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|---|------|
| Designing and Assessing VR/AR Displays to Increase User Inclusivity, VSS Symposia           | 2017 |
| What more can natural images tell us about ON and OFF pathways? Cosyne Workshop             | 2017 |
| Designing and Assessing VR/AR Displays to Increase User Inclusivity, Google                 | 2017 |
| Designing and Assessing VR/AR Displays to Increase User Inclusivity, Stanford SCIEN         | 2017 |
| What 3D Scene Statistics Tell Us About 3D Vision, University of Pennsylvania                | 2016 |
| What 3D Scene Statistics Tell Us About 3D Vision, Rochester Institute of Technology         | 2016 |
| What 3D Scene Statistics Tell Us About 3D Vision, UW Madison                                | 2016 |
| What 3D Scene Statistics Tell Us About 3D Vision, UT Austin NETI Workshop                   | 2016 |
| The Computational Demands of Biological Stereovision, Massachusetts Institute of Technology | 2015 |

	The Visual Representation of Brights and Darks, Italian Institute of Technology	2015
	The Computational Demands of Biological Stereovision, Middlebury College	2015
	Creating Illusions of Depth, Google	2014
	Is Stereopsis Optimized for Our Natural Environment? Bay Area Vision Research Day	2013
	Is 3D Vision Optimized for Our Natural Environment? Dartmouth Cognitive Brown Bag	2013
	Is Stereopsis Optimized for Our Natural Environment? Bay Area Society for Information Display	2012
	The Perceptual Basis of Common Photographic Techniques, Stanford University	2012
TEACHING	Dartmouth College, Functional Neuroanatomy	2016
	UC Berkeley, Graduate Student Instructor, Brain, Mind & Behavior	2010
	UC Berkeley, Graduate Student Instructor, Mammalian Neuroanatomy	2008
LAB MEMBERS	Max Kinateder, Postdoctoral Fellow	
	Jonathan Huang ('17), Senior Thesis Student	
	Tim Tadros ('17), Senior Thesis Student	
	Irene Feng ('17), Senior Thesis Student	
	Justin Gualtieri ('18), Research Assistant	
	Klara Barbarossa ('20), Research Assistant	
LAB ALUMNI	Andrew Kim ('16), Research Assistant	
OTHER ACTIVITIES	Mind & Brain Night, After School Activity Nights	2008 – 2012
	Community Resources for Science, Middle School Classroom Lessons	2008 – 2012
	Helen Wills Neuroscience Institute, Speaker Series Committee	2008 – 2010
	Helen Wills Neuroscience Institute, Graduate Admissions Committee	2010