Emily Cooper emilycooper@berkeley.edu | www.emilyacooper.org

Positions

University of California, Berkeley **2018 –**
Associate Professor, School of Optometry & Vision Science, Helen Wills Neuroscience Institute 2024 –
Assistant Professor, School of Optometry & Vision Science, Helen Wills Neuroscience Institute 2018 – 2024

Dartmouth College **2015 – 2018**
Assistant Research Professor, Psychological and Brain Sciences 2015 – 2018
Adjunct Assistant Professor, Computer Science 2016 – 2018

Stanford University **2013 – 2015**
Postdoctoral Research Scholar, Psychology

Education

University of California, Berkeley **2007 – 2012**
Ph.D., Neuroscience
Dissertation: Perception of Depth in Real and Pictured Environments
(Advisor: Martin Banks)

University of Chicago **2003 – 2007**
B.A., Psychology and English Language & Literature (Phi Beta Kappa)

Fellowships

University of Vermont, *Visiting Scholar* 2024
National Science Foundation, *Graduate Research Fellowship* 2011
Department of Defense, *National Defense Science & Engineering Graduate Fellowship* 2009
Howard Hughes Medical Institute, *Undergraduate Research Fellowship* 2006

Research Funding

External Grants

Active

Alcon, *Development of a vision simulator* (co-PI) 2023 – 2025
National Science Foundation, *CAREER: Smartglasses for all* (PI) 2021 – 2026
National Institute of Health, *Neural codes underlying visual segmentation* (co-I, PI Huang) 2020 – 2025

Completed

Meta Reality Labs, *Perceptual distortions produced by spectacle magnification* (PI) 2022 – 2023
Facebook Reality Labs, *Adaptation to minification caused by spectacles* (PI) 2020 – 2021
Human Frontier Science Program, *Visual circuit adaptations in zebrafish & cichlids* (co-I) 2018 – 2021
Google, *Characterizing the perceptual eyebox* (PI) 2019 – 2019
Samsung, *Global Research Outreach, Monovision and focus-tunable near-eye displays* (co-I, PI Wetzstein) 2016 – 2017

Internal Grants

Active

Hellman Fellows Fund (UC Berkeley), *A Bayesian model of visual impairment* (PI) 2022 – 2024

Completed

CITRIS Core Seed Funding (UC-wide), *Enhancing obstacle visibility using a head-mounted vision aid* (co-PI) 2020 – 2020
Neukom Institute (Dartmouth College), *Biologically-plausible model of associative learning* (co-PI) 2017 – 2017

Unrestricted Gifts

Meta Reality Labs	2023
Samsung	2023
Facebook Reality Labs	2018
Intel Light Field Display ISRA Program	2017
Oculus	2017
Microsoft Hololens Research Program	2015

Awards

Simons Collaboration on the Global Brain Conference Award, *CSHL Computational Neuroscience: Vision*	2024
Berkeley Optometry, *40 under 40 Award*	2023
National Eye Institute, *Early Career Scientist Travel Grant*	2019
NVIDIA, *Academic GPU Award*	2016
Stanford University, *Henzl-Gabor Young Women in Science Travel Award*	2013
ARVO, *Vision Sciences Society Student Travel Award*	2012
UC Berkeley, *Outstanding Graduate Student Teaching Award*	2009

Articles

E.F. Sherbak, I.R. McLean, I.M. Erkelens, L.T. Mikkelsen, R. Sharma and **E.A. Cooper**. The Initial Progression of Physical and Perceptual Symptoms Associated with Aniseikonia. *Translational Vision Science & Technology*, 13(11):30, 2024

M. Wang, **E.A. Cooper**, L. Moro, B.A. Narasimhan and H. Chen. A Model for the Appearance of Interocular Colorimetric Differences in Binocular XR Displays. [Conference Paper] *SID Symposium Digest of Technical Papers*, 55, 177-181, 2024

B.M. Chin, M. Wang, L.T. Mikkelsen, C.T. Friedman, C.J. Ng, M.A. Chu and **E.A. Cooper**. A Paradigm for Characterizing Motion Misperception in People with Typical Vision and Low Vision. *Optometry & Vision Science*, 101(5), 252-262, 2024

I.R. McLean, I.M. Erkelens and **E.A. Cooper**. How Small Changes to One Eye's Retinal Image Can Transform the Perceived Shape of a Very Familiar Object. *Proceedings of the National Academy of Sciences*, 121(17):e2400086121, 2024

T.S. Manning, E. Alexander, B.G. Cumming, G.C. DeAngelis, X. Huang and **E.A. Cooper**. Transformations of Sensory Information in the Brain Suggest Changing Criteria for Optimality. *PLOS Computational Biology*, 20(1):e1011783, 2024

M. Wang, J. Ding, D.M. Levi and **E.A. Cooper**. The Effect of Interocular Contrast Differences on the Appearance of Augmented Reality Imagery. *ACM Transatctions on Applied Perception*, 21(1):1, 2023

E.A. Cooper, R. Casati, H. Farid and P. Cavanagh. The Art of the Float. *Journal of Vision*, 23(8):13, 2023

I.R. McLean, I.M. Erkelens, E.F. Sherbak, L.T. Mikkelsen, R. Sharma and **E.A. Cooper**. The Contribution of Image Minification to Discomfort Experienced in Wearable Optics. *Journal of Vision*, 23(8):10, 2023

L.T. Cai, V.S. Krishna, T.C. Hladnik, N.C. Guilbeault, C. Vijayakumar, M. Arunachalam, S.A. Juntti, A.B. Arrenberg, T.R. Thiele and **E.A. Cooper**. Spatiotemporal Visual Statistics of Aquatic Environments in the Natural Habitats of Zebrafish. *Scientific Reports*, 13:12028, 2023

E.A. Cooper. The Perceptual Science of Augmented Reality. [Review Article] *Annual Review of Vision Science*, 9(1), 455-478, 2023

J.S. Tsay, S. Tan, M.A. Chu, R.B. Ivry and **E.A. Cooper**. Low Vision Impairs Implicit Sensorimotor Adaptation in Response to Small Errors, but not Large Errors. *Journal of Cognitive Neuroscience*, 35(4): 736-748, 2023

D.R. Fox, A. Ahmadzada, C.T. Wang, S. Azenkot, M. Chu, R. Manduchi and **E.A. Cooper**. Using Augmented Reality

to Cue Obstacles for People with Low Vision. *Optics Express*, 31(4): 6827-6848, 2023

T.S. Manning, B. Naecker, I.R. McLean, J. Pillow, B. Rokers and **E.A. Cooper**. A General Framework for Inferring Bayesian Ideal Observer Models from Psychophysical Data. *eNeuro*, 10(1): ENEURO.0144-22.2022 1-17, 2023

E. Alexander, L.T. Cai, S. Fuchs, T.C. Hladnik, Y. Zhang, V. Subramanian, N.C. Guilbeault, C. Vijayakumar, M. Arunachalam, S.A. Juntti, T.R. Thiele, A.B. Arrenberg, and **E.A. Cooper**. Optic Flow in the Natural Habitats of Zebrafish Supports Spatial Biases in Visual Self-Motion Estimation. *Current Biology*, 32, 1-14, 2022

S. Reeves, **E.A. Cooper**, R. Rodriguez and J. Otero-Millan. Head Orientation Influences Saccade Directions During Free Viewing. *eNeuro*, 9(6): ENEURO.0273-22.2022 1–12, 2022

M. Wang, J. Ding, D.M. Levi and **E.A. Cooper**. The Effect of Spatial Structure on Binocular Contrast Perception. *Journal of Vision*, 22(12):7, 2022

J.D. Nguyen, S. Tan, S. Azenkot, M.A. Chu and **E.A. Cooper**. Longitudinal Trends in Case Histories and Rehabilitative Device Assessments at Low Vision Exams. *Optometry & Vision Science*, 99(11), 817-829, 2022

M. Wang and **E.A. Cooper**. Perceptual Guidelines for Optimizing Field of View in Stereoscopic Augmented Reality Displays. *ACM Transactions on Applied Perception*, 19(4):19, 2022

A.L. Boroshok, A.T. Park, P. Fotiadis, G.H. Velasquez, U.A. Tooley, K.R. Simon, J.C.P. Forde, L. Delgado Reyes, M.D. Tisdall, D.S. Bassett, **E.A. Cooper** and A.P. Mackey. Individual Differences in Frontoparietal Plasticity in Humans. *npj Science of Learning*, 7:14, 2022

I.R. McLean, T.S. Manning and **E.A. Cooper**. Perceptual Adaptation to Continuous Versus Intermittent Exposure to Spatial Distortions. *Investigative Ophthalmology and Visual Science*, 63(5):29, 2022

M. Kinateder and **E.A. Cooper**. Assessing Effects of Reduced Vision on Spatial Orientation Ability Using Virtual Reality. [Conference Paper] *Conference Proceedings of Spatial Cognition, BJMC*, 9(3), 243-259, 2021

M. Wang and **E.A. Cooper**. A Re-Examination of Dichoptic Tone Mapping. *ACM Transactions on Graphics*, 40(2):13, 2021

S.A. Cholewiak, Z. Başgöze, O. Cakmakci, D.M. Hoffman and **E.A. Cooper**. A Perceptual Eyebox for Near-Eye Displays. *Optics Express*, 28(25), 38008-38028, 2020

T.E. Yerxa, E. Kee, M.R. DeWeese and **E.A. Cooper**. Efficient Sensory Coding of Multidimensional Stimuli. *PLOS Computational Biology*, 16(9):e1008146, 2020

Z. Başgöze, D.N. White, J. Burge and **E.A. Cooper**. Natural Image Statistics at Depth Edges Modulate Perceptual Stability *Journal of Vision*, 20(8):10, 2020

Z. Başgöze, J. Gualtieri, M.T. Sachs and **E.A. Cooper**. Navigational Aid Use by Individuals with Visual Impairments. [Conference Paper] *Journal on Technology & Persons with Disabilities*, 8, 22-39, 2020

T. Tadros, N.C. Cullen, M.R. Greene and **E.A. Cooper**. Assessing Neural Network Scene Classification from Degraded Images. *ACM Transactions on Applied Perception*, 16(4):21, 2019

J. Huang, M. Kinateder, M.J. Dunn, W. Jarosz, X. Yang and **E.A. Cooper**. An Augmented Reality Sign-reading Assistant for Users with Reduced Vision. *PLOS One*, 14(1):e0210630, 2019

Z. Başgöze, A.P. Mackey and **E.A. Cooper**. Plasticity and Adaptation in Adult Binocular Vision. [Review Article] *Current Biology*, 28(24), R1406-R1413, 2018

M. Kinateder, J. Gualtieri, M.J. Dunn, W. Jarosz, X. Yang and **E.A. Cooper**. Using an Augmented Reality Device as a Distance-Based Vision Aid – Promise and Limitations. *Optometry & Vision Science*, 95(9), 727-737, 2018

B. Rokers, J.M. Fulvio, J. Pillow, and **E.A. Cooper**. Systematic Misperceptions of 3D Motion Explained by Bayesian Inference. *Journal of Vision*, 18(3):23, 2018

E.A. Cooper and M.S. Banks. Perceived Facial Distortions in Selfies are Explained by Viewing Habits. [Commentary] *JAMA Facial Plastic Surgery*, 20(5), 431, 2018

R. Konrad, N. Padmanaban, K. Molner, **E.A. Cooper**, and G. Wetzstein. Accommodation-invariant Computational Near-eye Displays. *ACM Transactions on Graphics (SIGGRAPH Conference Proceedings)*, 36(4):88, 2017

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. *Proceedings of the National Academy of Sciences*, 114(9), 2183-2188, 2017

E.A. Cooper, M. van Ginkel, and B. Rokers. Sensitivity and Bias in the Discrimination of 2D and 3D Motion Direction. *Journal of Vision*, 16(10):5, 2016

W.W. Sprague, **E.A. Cooper**, S. Reissier, B. Yellapragada, and M.S. Banks. The Natural Statistics of Blur. *Journal of Vision*, 16(10):23, 2016

E.A. Cooper and A.P. Mackey. Sensory and Cognitive Plasticity: Implications for Academic Interventions. [Review Article] *Current Opinion in Behavioral Sciences*, 10, 21-27, 2016

E.A. Cooper. A Normalized Contrast-encoding Model Exhibits Bright/dark Asymmetries Similar to Early Visual Neurons. *Physiological Reports*, 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. Tosic 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, 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, 2013

E.A. Cooper, E.A. Piazza, and M.S. Banks. The Perceptual Basis of Common Photographic Practice. *Journal of Vision*,

12(5):8, 2012

R.T. Held, **E.A. Cooper**, and M.S. Banks. Blur and Disparity are Complementary Cues to Depth. *Current Biology*, 22(5), 426-31, 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, 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):19, 2010

Abstracts

M.D. Anderson, J. Otero-Millan and **E.A. Cooper**. Tracking visual targets during simulated self motion. *Journal of Vision*, 24:729, 2024

B.M. Chin, M.S. Banks, D. Nankivil, A. Roorda and **E.A. Cooper**. Bringing Color into Focus: Accommodative State Varies Systematically with the Spectral Content of Light. *Journal of Vision*, 24:1452, 2024

B.M. Chin, M.S. Banks, D. Nankivil, A. Roorda and **E.A. Cooper**. Bringing Color into Focus: Dynamic Accommodation Responses to Polychromatic Stimuli. *Optica Fall Vision Meeting*, 2023

I.R. McLean, E.F. Sherbak, L.T. Mikkelsen, I.M. Erkelens, R. Sharma and **E.A. Cooper**. The Effects of Monocular and Binocular Retinal Image Minification on Eyestrain. *Optica Fall Vision Meeting*, 2023

I.R. McLean, I.M. Erkelens, E.F. Sherbak, L.T. Mikkelsen, R. Sharma and **E.A. Cooper**. The Effects of Monocular and Binocular Retinal Image Minification During Natural Tasks. *Journal of Vision*, 23:4700, 2023

C.T. Friedman*, M. Wang, X. Huang and **E.A. Cooper**. Natural Scene Statistics of Figure-Ground Motion in MT Receptive Fields. *Journal of Vision*, 23:4934, 2023 *Author name originally published as C.T. Wang

M. Wang, J. Ding, D. Levi and **E.A. Cooper**. The Multifaceted Appearance of Dichoptic Gratings and Noise Stimuli. *Journal of Vision*, 22:3730, 2022

T.S. Manning, J.W. Pillow, B. Rokers and **E.A. Cooper**. Humans Make Non-ideal Inferences about World Motion. *Journal of Vision*, 22:4054, 2022

I.R. McLean, I.M. Erkelens and **E.A. Cooper**. Binocular Perceptual Distortions Produced by Retinal Image Magnification. *Journal of Vision*, 22:3292, 2022

T.C. Hladnik, E. Alexander, L.T. Cai, Sabrina Fuchs, V. Krishna S., T. Thiele, **E.A. Cooper** and A. Arrenberg. A Spherical Arena for Visual Surround Stimulation and Calcium Imaging in Zebrafish. *Imaging Structure and Function of the Zebrafish Brain Conference*, 2022

I.R. McLean, T.S. Manning and **E.A. Cooper**. Perceptual Adaptation to Continuous Versus Intermittent Spatial Distortions. *Society for Neuroscience*, 2021

T.S. Manning, E. Alexander, G.C. DeAngelis, X. Huang and **E.A. Cooper**. Role of MT Disparity Tuning Biases in Figure-Ground Segregation. *Society for Neuroscience*, 2021

S.M. Reeves, **E.A. Cooper**, R. Rodriguez and J. Otero-Millan. Head Tilt Influences Saccade Directions During Free Viewing. *Society for Neuroscience*, 2021

T.S. Manning, I.R. McLean, B. Naecker, J. Pillow, B. Rokers and **E.A. Cooper**. Estimating Perceptual Priors with Finite

Experiments. *Journal of Vision*, 21:2215, 2021

M. Wang, J. Ding, D.M. Levi and **E.A. Cooper**. Binocular Contrast Perception of Gratings, Noise, and Natural Images. *Journal of Vision*, 21:2181, 2021

E. Alexander, V. Krishna S., T.C. Hladnik, N.C. Guilbeault, L.T. Cai, T.R. Thiele, A.B. Arrenberg and Emily A. Cooper. Self-motion Cues in the Natural Habitats of Zebrafish Support Lower Visual Field Bias. *Journal of Vision*, 2021

M. Wang and **E.A. Cooper**. A Re-examination of Dichoptic Tone Mapping Methods. *Journal of Vision*, 20:887, 2020

L.T. Cai, V. Krishna, T. Hladnik, N. Guilbeault, S. Juntti, T. Thiele, A. Arrenberg and **E.A. Cooper**. Visual Statistics of Aquatic Environments in the Natural Habitats of Zebrafish. *Journal of Vision*, 20:433, 2020

T. Thiele, S. Juntti, K. Wang, L. Cai, T. Hladnik, R. Meier, F. Dehmelt, J. Hinz, V. Subramanian, N. Guilbeault, **E.A. Cooper** and A. Arrenberg. Investigation of Visual Circuit Adaptations to Natural Environmental Motion in Zebrafish and Cichlids. *Zebrafish Neural Circuits and Behavior*, 2019

Z. Başgöze, D. White, J. Burge and **E.A. Cooper**. Effects of Context on the Visual Stability of Depth Edges in Natural Scenes. *Journal of Vision*, 19:223a, 2019

X. Huang, C. Wang, B. Arseneau, T.E. Yerxa and **E.A. Cooper**. Natural scene statistics of depth and motion pertinent to figure-ground segregation. *Society for Neuroscience*, 2019

A. Boroshok, G. Velasquez, A. Park, K. Simon, J. Forde, **E.A. Cooper** and A.P. Mackey. Individual Differences in Human Frontoparietal Plasticity. *Flux Congress*, 2019

M. Kinateder and **E.A. Cooper**. Using Visual Snapshots to Estimate Egocentric Orientation in Natural Environments. *Journal of Vision*, 18:513, 2018

M. Kinateder, T. Pfaff, and **E.A. Cooper**. The Visual Features of Smoke. *Journal of Vision*, 17(10):415, 2017

S. Finocchetti, **E.A. Cooper**, and M. Gori. Visual Experience and Spatial Reference Frames for Sound Localization. *International Multisensory Research Forum*, 2017

N. Padmanban, R. Konrad, **E.A. Cooper**, and G. Wetzstein. Optimizing Virtual Reality for All Users Through Adaptive Focus Displays. *SIGGRAPH*, 2017

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. Tosic, 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

Research Talks

External (Invited)

A Transformation of Sensory Information in the Brain, *Flatiron Institute/NYU*	2024
Binocular Vision in Real and Unreal Worlds, *University of Vermont*	2024
A Real World Visual Illusion, *Indiana University*	2024
A Real World Visual Illusion, *Smith Kettlewell Eye Research Institute*	2024
Improving Augmented Reality Through Perceptual Science, *Optica Fall Vision Meeting*	2023
3D Vision, *Cold Spring harbor Laboratory: Vision Course*	2023
Improving Augmented Reality Through Perceptual Science, *Northwestern University*	2022
Taking a Binocular View of Augmented Reality System Design, *Stanford University*	2022
Perceptual Guidelines for Optimizing Field of View in Stereoscopic Augmented Reality, *Optica Virtual Panel*	2022
The Potential to Improve Vision with Augmented Reality, *SPIE AR VR MR Conference*	2022
Perceptual Science for Augmented Reality, *Cardiff University*	2021
A Perceptual Eyebox for Augmented Reality, *Stanford University*	2021
Perceptual Science for Augmented Reality, *Brown University*	2021
Perceptual Science for Augmented Reality, *Northwestern University*	2020
Perceptual Science for Augmented Reality, *Smith Kettlewell*	2020
A Perceptual Eyebox for Augmented Reality, *SNAP*	2020
Natural and Virtual 3D Vision, *UNR Big Data Summer School*	2020
Understanding Visual Demands for Aquatic Animals used in Neuroscience Research, *Sussex Visions*	2020
A Perceptual Eyebox for Augmented Reality, *Google*	2019
3D Vision, *Cold Spring Harbor Laboratory: Vision Course*	2019
Considering Individual Differences in Vision for AR/VR, *Magic Leap*	2019
3D Vision in Natural Environments, *SUNY Optometry*	2019
Insights Across Animal Models, Computational Models, & Humans, *Computational Cognitive Neuroscience*	2018
Using AR/VR to Better Understand Individual Differences in Vision, *Oculus*	2018
The Potential for Improving Impaired Vision with Augmented Reality, *OSA Frontiers in Optics*	2017
What 3D Scene Statistics Tell Us About 3D Vision, *Harvard Medical School*	2017

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 College* 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

Internal (UC Berkeley)

The Potential to Enhance Vision Care with Augmented Reality, *Silver Bear Society Dinner* 2023
3D Vision in Natural Environments, *UC Berkeley Neuroscience Bootcamp* 2021
The Potential for Improving Impaired Vision with Augmented Reality, *UCB Learning in Retirement* 2020
Perceptual Science for Augmented Reality, *UC Berkeley Institute of Cognitive and Brain Sciences* 2020
A Perceptual Eyebox for Augmented Reality, *CIVO Annual Meeting* 2019
A Perceptual Eyebox for Augmented Reality, *UC Berkeley Vive Center* 2019
3D Vision in Natural Environments, *UC Berkeley Neuroscience Bootcamp* 2019
3D Vision in Natural Environments, *UC Berkeley Institute of Cognitive and Brain Sciences* 2019
The Potential to Improve Spatial Vision with Augmented Reality, *CIVO Launch Meeting* 2018
Lab Research Overview, *UC Berkeley Redwood Center* 2018
3D Vision in Natural Environments, *Bay Area Vision Research Day* 2018

Teaching

UC Berkeley

VS 260D Seeing in Time, Space, and Color Spring 2025
VS 219 Binocular Vision and Space Perception Spring 2025
VS 260D Seeing in Time, Space, and Color Spring 2024
VS 219 Binocular Vision and Space Perception Spring 2024
Neurosci 290A Neuroscience Research Design & Analysis (guest lecturer) Fall 2023
VS 260D Seeing in Time, Space, and Color Spring 2023
VS 219 Binocular Vision and Space Perception Spring 2023
Neurosci 290A Neuroscience Research Design & Analysis (guest lecturer) Fall 2022
VS 260D Seeing in Time, Space, and Color Spring 2022
VS 219 Binocular Vision and Space Perception Spring 2022
Neurosci 290A Neuroscience Research Design & Analysis (guest lecturer) Fall 2021
VS 260D Seeing in Time, Space, and Color Spring 2021
VS 217 Oculomotor Function & Neurology Spring 2021
Neurosci 290A Neuroscience Research Design & Analysis (guest lecturer) Fall 2020
VS 260D Seeing in Time, Space, and Color Spring 2020
VS 217 Oculomotor Function & Neurology Spring 2020
Neurosci 290A Neuroscience Research Design & Analysis (guest lecturer) Fall 2019
VS 260D Seeing in Time, Space, and Color (guest lecturer) Spring 2019

Dartmouth College

Functional Neuroanatomy Spring 2018
Technology, Psychology & Neuroscience Spring 2017

Functional Neuroanatomy — Spring 2016

UC Berkeley - Graduate Student Instructor

MCB 61 Brain, Mind & Behavior — Spring 2010
MCB 163 Mammalian Neuroanatomy — Fall 2008

Student and Postdoctoral Research Advisees

Undergraduate

Kensal Coudriet, Undergraduate Researcher (Neuroscience) — 2023 – 2023
Terrie Joo, Undergraduate Researcher (Cognitive Science) — 2022 – 2023
Alexander Ladd, Undergraduate Researcher (Data Science) — 2019 – 2020
Thomas Yerxa, Undergraduate Senior Thesis Student (Physics) — 2018 – 2019
Irene Feng, Undergraduate Senior Thesis Student (Computer Science) — 2016 – 2017
Jonathan Huang, Undergraduate Senior Thesis Student (Computer Science) — 2015 – 2017
Tim Tadros, Undergraduate Senior Thesis Student (Computer Science) — 2015 – 2017

Graduate

Ph.D.

Iona McLean, Vision Science — 2019 – 2024
Minqi Wang, Vision Science — 2018 – 2023

O.D.

Muhammad Muhanna, Student Researcher — 2023 –
Clara Friedman, Honors Thesis Student — 2021 –
Ester Sherbak, Honors Thesis Student — 2021 – 2024
Loganne Mikkelsen, Student Researcher — 2021 – 2024
Ahmad Ahmadzada, Student Researcher — 2021 – 2023
Zita Alamparambil, Student Researcher — 2020 – 2020
Jacqueline Nguyen, Honors Thesis Student — 2019 – 2021
Phoebe Lo, Student Researcher — 2019 – 2021
Steven Tan, Student Researcher — 2019 – 2021
Melody To, Student Researcher — 2019 – 2020
Madi Sachs, Student Researcher — 2019 – 2019

Postdoctoral

Angie Godinez — 2024 –
Matt Anderson — 2023 –
Benjamin Chin — 2023 –
Emma Alexander — 2020 – 2022
Tyler Manning — 2019 – 2022
Tianhao Cai — 2018 – 2020
Zeynep Başgöze — 2017 – 2020
Max Kinateder — 2016 – 2018

Other Activities

UC Berkeley

Vision Science Program, Chair — 2025 –
Center for Innovation in Vision and Optics Outreach Program, Coordinator — 2020 –
Fiat Lux Scholarship Program, Faculty Interviewer/Mentor — 2020 –
Cognitive Science Major, Affiliated Faculty — 2019 –
Vision Science Program, Student Outreach Faculty Liaison — 2019 –

Institute of Cognitive and Brain Sciences, Faculty Member	2018 –
Center for Innovation in Vision and Optics, Co-Director	2018 –
Vision Science Program, Faculty Advisor for Postdoctoral Affairs	2021 – 2024
Helen Wills Neuroscience Institute, NIH/UNR ENDURE Program Faculty Facilitator	2021 – 2024
School of Optometry, Mentorship Pilot Program Faculty Mentor	2021 – 2022

UC Berkeley – Committees

School of Optometry, ACOE Accreditation Committee Member	2024 –
Vision Science Graduate Program, Admissions Committee Chair	2023 – 2024
School of Optometry, Faculty Hiring Planning Committee Member	2022 – 2023
School of Optometry, O.D. Admissions Committee Member	2021 – 2024
School of Optometry, PCO Faculty Search Committee Member	2021 – 2021
Helen Wills Neuroscience Institute, Graduate Admissions Committee Member	2020 – 2021
Vision Science Graduate Program, Admissions Committee Member	2019 – 2022
Helen Wills Neuroscience Institute, Graduate Admissions Committee Member	2010 – 2011
Helen Wills Neuroscience Institute, Speaker Series Committee Member	2008 – 2010

External

Community Resources for Science, Board of Directors Member	2024 –
Cold Spring Harbor Lab, Computational Neuroscience: Vision, Course Organizer/Instructor	2022 –
Females of Vision et al., Advisory Board Member	2018 –
Eurographics, State-of-the-art Reports Program Committee Member	2022 – 2023
National Science Foundation, Panel and Ad Hoc Grant Proposal Reviewer	2021 – 2023
Society for Information Display Applied Vision Subcommittee Member	2020 – 2021
Mind & Brain Night, After School Activity Night Coordinator	2008 – 2012
Community Resources for Science, Middle School Classroom Volunteer	2008 – 2012