### **Curriculum Vitae**

### Cheryl A. Olman N218 Elliott Hall, 75 East River Road Minneapolis, MN 55455 (612) 626-7607 <u>caolman@umn.edu</u> <u>https://oliv.psych.umn.edu</u>

### Education

Ph.D., University of Minnesota,	Graduate Program in Neuroscience	2003
Dissertation Title:	"Natural Image Coding in Early Visual Ar Resonance Imaging and Psychophysical S System"	eas: Functional Magnetic tudies of the Human Visual
Ph.D. Advisors:	Daniel J. Kersten and Kamil Ugurbil	
B.S., Michigan State University	, Physics	1995
Academic Appointments		
University of Minnesota, Twin Associate Professor, De	Cities partment of Psychology	2012-present
University of Minnesota, Twin Assistant Professor, De	Cities partments of Psychology and Radiology	2005-2012
New York University, Center fo Postdoctoral Fellow	or Neural Science	June, 2004-August, 2005
University of Minnesota, Center Research Associate	r for Magnetic Resonance Research	January, 2004-May, 2004
Academic Administrative App	pointments	
Department of Psychology, Uni Associate Chair for Res	versity of Minnesota earch and Public Engagement	June 2022-present
Other Professional Positions		
3M Company, Fiber Optics La Research Physicist	boratory	1996-1999
PhotoControl, Lens Developm Research Physicist	ent Department	1995-1996

### **Current Membership in Professional Organizations**

Vision Sciences Society	2000-
International Society of Magnetic Resonance in Medicine	2000-

#### HONORS AND RECOGNITION

#### **University of Minnesota**

Arthur "Red" Motley Exemplary Teaching Award, College of Liberal Arts. Student-	2011
nominated; award includes \$5,000 for career advancement.	
Horace T. Morse-University of Minnesota Alumni Association Award for Outstanding	2019
Contributions to Undergraduate Education. Department-nominated. Award includes	
\$15,000 and membership in the Academy of Distinguished Teachers.	
University of Minnesota President's Award for Outstanding Service. Colleague-	2021
nominated; \$1,000 stipend.	
Career Readiness Teaching Award, University of Minnesota College of Liberal Arts.	2022
Colleague-nominated; award includes \$2,500 for career advancement.	

#### Honors Awarded to Student/Trainee

Scholar Award, from the Achievement Rewards for College Scholars Foundation	
awarded to Joseph Emerso	2011
Graduate Research Fellowship, from the National Science Foundation, awarded to	
Michael-Paul Schallmo	2011
Doctoral Dissertation Fellowship, from the University of Minnesota, awarded to	
Michael-Paul Schallmo 2014	4-2015
Interdisciplinary Dissertation Fellowship, from the University of Minnesota, awarded to	
Karen Navarro 2021	1-2022

### **RESEARCH, SCHOLARSHIP, AND CREATIVE WORK**

### Grants, Contracts, Awards from External Sources

### <u>Active</u>

Flexible normalization in ferret V1: computational modeling and 2-photon imaging 08/01/2021-06/30/2026 Role: PI (12% effort) Funding agency: NIH NINDS \$2.3M total award, Year 1 direct costs: \$313,906

Perceptual mechanisms of visual hallucinations and illusions in psychosis 07/01/2017-06/30/2022 Role: co-I (10% effort) Funding agency: NIH NIMH \$2.4M total award, Year 1 direct costs: \$414,595

Neurons, vessels and voxels: multi-modal imaging of layer-specific signals 09/16/2016-06/30/2022 Role: PI (15% effort) Funding agency: NIH NINDS \$5M total award, Year 1 direct costs: \$847,498

Complex pitch perception in complex environments 04/01/2017-03/31/2022 Role: Co-Investigator (8% effort) PI: Oxenham Funding agency: NIH NIDCD (R01 DC005216) \$2.3M total award, Year 1 direct costs: \$300,000

Neural disconnection and errant visual perception in psychotic psychopathology 09/01/2016-07/31/2022 Role: Co-Investigator (10% effort) PI: Sponheim, Minneapolis VAMC Funding Agency: NIH NIHM (U01 MH108150) \$5.3M total award, Year 1 direct costs: \$800,000

### **Pending**

Internally generated visual states simulated by dynamical circuits and flexible normalization 7/1/2023-6/30/2026 Role: PI Co-Is: Odelia Schwartz, University of Miami and Audrey Sederberg (Neuroscience) Funding Agency: NSF (Mid-Career Award) \$331,000 total award

### **Completed**

Representation of visual features in mental images of complex scenes 2/1/2014-1/31/2019 Role: Consultant PI: Thomas Naselaris, Assistant Professor, Medical College of South Carolina Funding Agency: NIH NEI (R01 EY023384) \$250,000/year direct costs

Depth-dependent fMRI: feasibility and utility 02/01/2016-01/31/2019 Role: PI (25% effort) Funding Agency: NIH NINDS (R21 NS075525) \$418,000 total award, Year 1 direct costs: \$150,000

Frontoparietal priority maps as biomarkers of mTBI 09/30/2014-09/29/2018 Role: PI (8% effort) Funding Agency: CDMRP Vision Research Program, Hypothesis Development Program \$250,000 total award

Quantitative Modeling of Visual Perception Endophenotypes in Schizophrenia 10/01/2014-9/30/2018 Role: Co-investigator (10% effort) PI: Scott Sponheim, Associate Professor, Minneapolis VA and U of M Dept of Psychiatry Funding Agency: VA Merit grant \$1.3M total award

NMR Imaging and Spectroscopy 6/01/2013 – 5/31/2018 Role: Key Personnel (5% effort) PI: Kamil Ugurbil, Director, Center for Magnetic Resonance Research Funding Agency: NIH NIBIB (P41 EB015894) \$1.3M/year total costs

Neuro-optometry therapy in TBI 02/01/2016-06/30/2018 Role: Co-Investigator (2% effort) PIs: Sarah Rockswold, HCMC; Christophe Lenglet, CMRR Funding Agency: Spinal Cord Injury and Traumatic Brain Injury Fund, Minnesota State Office of Higher Education \$125,000 total costs

Core Grant for Vision Research 9/01/2011 – 8/31/2017 Role: Director, Neuroimaging Module PI: Eric Newman, Professor, Department of Neuroscience Funding Agency: NIH NEI (P30 EY011374) \$2,000,000 total direct costs

Functional MRS of Inhibitory Neural Processes 4/01/2014 – 3/31/2016 Role: Co-Investigator (8% effort) PI: Silvia Mangia Funding Agency: NIH NINDS (R03 NS082541) \$100,000 total direct costs

Localized fMRI of Heterogeneous Neural Activity 2/15/2012 – 1/31/2015 Role: PI Funding Agency: NIH NINDS (R21 NS075525) \$275,000 total direct costs

EAGER: Separating BOLD nonlinearity from neuronal nonlinearity in human with achiasma 9/15/2012-8/31/2014 Role: Co-investigator PI: Bosco Tjan, University of Southern California Funding Agency: NSF (BCS-1255994) \$48,011 total costs; \$7,200 sub-award to U of Minnesota for scanning Object Perception: Mechanisms for Resolving Ambiguity 10/01/2009 – 9/30/2012 Role: PI Multiple-PIs: Sheng He, Dan Kersten, Paul Schrater, Department of Psychology Funding Agency: NIH NEI (R01 EY015621) \$290,000/year

### Grants, Awards, Gifts, or Endowment Earnings from Internal Sources

### <u>Active</u>

Uncovering the neural correlates of non-optic sight in blindness using fMRI 1/01/2022 – 6/30/2023 Role: PI Co-I: Jesse Breedlove, postdoctoral trainee Brain Imaging Project Grant, College of Liberal Arts \$14,740

Investigating characteristics of foveal feedback using ultra high field fMRI 1/01/2021 – 6/30/2022 Role: PI Co-I: Kim Weldon, Research Staff Grant in Aid of Research, Artistry, and Scholarship \$14,700

A Neuroimaging Investigation of Perceptual Learning as a Treatment for Amblyopia 1/01/2021 – 12/31/2022 Role: PI Co-I: Karen Navarro, Graduate Student Brain Imaging Project Grant, College of Liberal Arts \$14,750

Investigating characteristics of foveal feedback using ultra high field fMRI 1/01/2021 – 12/31/2022 Role: PI Co-I: Kim Weldon, Research Staff Brain Imaging Project Grant, College of Liberal Arts \$14,200

### **Completed**

Attention and fMRI Symposium 6/02/2017 – 12/31/2019 Role: PI Brain Imaging Grant, College of Liberal Arts LATIS \$10,000

Science Fair Mentoring 7/01/2016 – 6/30/2019 Role: PI Joan Aldous Innovation Fund, College of Liberal Arts \$5,000

Virtual V1sion: a framework for sharing data and computational models 7/01/2014 – 6/30/2017 Role: PI Brain Imaging Project Grant, College of Liberal Arts \$9,900

MRI Simulator 6/02/2016-6/02/2018 Role: PI Academic Innovation Grant, College of Liberal Arts LATIS \$9,469.23

Sub-millimeter imaging of visual activity during naturalistic movies 7/01/2014-6/30/2018 Role: PI Brain Imaging Project Grant, College of Liberal Arts \$7,200

Local Metabolic Costs of Inhibition 6/01/2007-12/01/2015 Role: PI Neuroimaging Grant, Institute for Translational Neuroscience \$50,000

Contribution of inhibition to perceptual deficits in schizophrenia: an MRS study 6/01/2012-6/30/2014 Role: PI Co-PI: Scott Sponheim Brain Imaging Project Grant, College of Liberal Arts \$8,400

Imaging Bottom-Up vs. Top-Down Perceptual Effects in Schizophrenia 6/01/2010-6/30/2011 Role: PI Co-PI: Scott Sponheim Brain Imaging Project Grant, College of Liberal Arts \$7,200

Expanded Server and Storage Capacity for High-Field fMRI Research 2009 Role: PI CLA Non-Instructional Instrumentation Grant \$11,000

Contextual Modulation of Early Visual Responses 6/01/2007-1/31/2009 Role: PI Grant-In-Aid of Research and Scholarship #20886, Graduate School \$10,000

### **Publications**

Key for authorship roles: <sup>L</sup>Lead, \*Senior, or <sup>C</sup>Contributing author. Key for graduate advisees: served as <sup>†</sup>primary advisor or <sup>+</sup>faculty mentor.

### **Refereed Journal Articles**

- Demirel, O. B., Yaman, B., Dowdle, L., Moeller, S., Vizioli, L., Yacoub, E., Strupp, J., <sup>C</sup>Olman, C. A., Ugurbil, K., Akcakaya, M. (2021). 20-fold Accelerated 7T fMRI Using Referenceless Self-Supervised Deep Learning Reconstruction. *Annual International Conference IEEE Engineering in Medicine, Biology, and Society.* 2021:3765-3769. https://doi.org/10.1109/EMBC46164.2021.9631107.
- <sup>+</sup>Pokorny, V. J., <sup>+</sup>Forsheim, V., Burton, P. C., Sponheim, S. R., <sup>\*</sup>Olman, C. A. (2021). Aberrant Cortical Connectivity during Ambiguous Object Recognition is Associated with Schizophrenia. *Biological Psychiatry: Cognitive Neuroscience and Neuroimaging*, 6(12):1193-1201. doi:10.1016/j.bpsc.2020.09.018.

Commentary: Bansal, S. (2021). Object Recognition in Psychosis: Altered Connectivity Between Levels of the Visual Perceptual Hierarchy. *Biological Psychiatry: Cognitive Neuroscience and Neuroimaging*, 6(12):1122-1124. https://doi.org/10.1016/j.bpsc.2021.08.005

- Demro, C., Mueller, B. A, Kent, J. S., Burton, P. C., <sup>C</sup>Olman, C. A., Schallmo, M.-P, Lim, K. O., Sponheim, S. R. (2021). The psychosis Human Connectome Project: An overview. *NeuroImage*, 241, 118439. https://doi.org/10.1016/j.neuroimage.2021.118439
- Longenecker, J. M., Pokorny, V. J., Kang, S. S., <sup>C</sup>Olman, C. A., Sponheim, S. R. (2021). Self-reported perceptual aberrations in psychosis map to event-related potentials and semantic appraisals of objects. *Journal of Abnormal Psychology*, 130(7):785-796. https://doi.org/10.1037/abn0000697
- Schallmo, M.-P., <sup>+</sup>Weldon, K. B., Burton, P. C., Sponheim, S. R., <sup>\*</sup>Olman, C. A. (2021). Assessing methods for geometric distortion compensation in 7T gradient echo fMRI data. *Human Brain Mapping*, 42(13):4205-4223. https://doi.org/10.1002/hbm.25540.
- <sup>+</sup>Pokorny, V., Lano, T., Schallmo, M.-P., <sup>C</sup>Olman, C. A., Sponheim, S. R. (2021). Reduced Influence of Perceptual Context in Schizophrenia: Behavioral and Neurophysiological Evidence. *Psychological Medicine*, 51(5):786-794. doi:10.1017/S0033291719003751.
- <sup>†</sup>Navarro, K. T., Sanchez, M. J., Engel, S. A., <sup>\*</sup>Olman, C. A., <sup>+</sup>Weldon, K. B. (2021). Depth-dependent functional MRI responses to chromatic and achromatic stimuli throughout V1 and V2. *NeuroImage*, *226*:117520. doi:10.1016/j.neuroimage.2020.117520.
- <sup>+</sup>Weldon, K. B. and <sup>\*</sup>Olman, C. A. (2021). Forging a path to mesoscopic imaging success with ultra-high field fMRI. *Philosophical Transactions B*. 376(1815):20200040. doi:10.1098/rstb.2020.0040.
- <sup>+</sup>Grant, A. N., Metzger, G., Van de Moortele, P.-F., Adriany, G., <sup>C</sup>Olman, C. A., Zhang, L., Koopmeiners, J., Eryaman, Y., Koeritzer, K., Adams, M., Henry, T., Uğurbil, K. (2020). 10.5T MRI static field effects on human cognitive, vestibular, and physiological function. *Magnetic Resonance Imaging*, 73:163-176. doi:10.1016/j.mri.2020.08.004.
- de Zwarte et al (2020). Intelligence, educational attainment and brain structure in those at familial highrisk for schizophrenia or bipolar disorder. *Human Brain Mapping*, 43(1):414-430. doi:10.1002/hbm.25206.
- <sup>+</sup>Breedlove, J., St.-Yves, G., <sup>C</sup>Olman, C. A., Naselaris, T. (2020). Generative feedback explains distinct brain activity codes for seen and mental images. *Current Biology*, *S0960-9822*(20)30494-2. doi:10.1016/j.cub.2020.04.014.
- Klein, S. D., <sup>C</sup>Olman, C. A., Sponheim, S. R. (2020). Perceptual Mechanisms of Visual Hallucinations and Illusions in Psychosis. *Journal of Psychiatry and Brain Science*, 5: e200020. doi:10.20900/jpbs.20200020.

- Ugurbil, K., Auerbach, E. J., Moeller, S., Grant, A. N., Wu, X., Van de Moortele, P.-F., <sup>C</sup>Olman, C. A., DeLaBarre, L., Schillak, S. Radder, J., Lagore, R., Adriany, G. (2019). Brain imaging with improved acceleration and signal-to-noise ratio at 7 Tesla obtained with 64 channel receive array. *Magnetic Resonance in Medicine*, *81*(1):495-509. doi:10.1002/mrm.27695
- Allen, E. J., Burton, P. C., Mesik, J., <sup>C</sup>Olman, C. A., Oxenham, A. J. (2019). Cortical correlates of attention to auditory features. *Journal of Neuroscience*, 39(17):3292-3300. doi:10.1523/JNEUROSCI.0588-18.2019.
- <sup>L</sup>Olman, C. A., Espensen-Sturges, T., Muscanto, I., Longenecker, J. M., Burton, P. C., Grant, A. N., Sponheim, S. R. (2019). Fragmented ambiguous objects: stimuli with stable low-level features for object recognition tasks. *PLoS One 14*(4):e0215306. doi:10.1371/journal.pone.0215306.
- <sup>L</sup>Olman, C. A., Bao, P, Engel, S. A., Grant, A. N., Purington, C., Qiu, C., Schallmo, M.-P., Tjan, B. S. (2018). Hemifield columns co-opt ocular dominance column structure in human achiasma. *Neuroimage*, 164:59-66. PMC5481499. doi:10.1016/j.neuroimage.2016.12.063
- Allen, E. J., Burton, P. C., <sup>C</sup>Olman, C. A., Oxenham, A. J. (2017). Representations of pitch and timbre variation in human auditory cortex. *Journal of Neuroscience* 37(5): 1284-1293. https://doi.org/10.1523/JNEUROSCI.2336-16.2016
- <sup>†</sup>Schallmo, M.-P., Burton, P. C., Grant, A. N., \*Olman, C. A. (2016). The effects of orientation and attention during surround suppression of small image features: A 7 Tesla fMRI study. *Journal of Vision 16*(10): 19. https://doi.org/10.1167/16.10.19
- <sup>†</sup>Qiu, C., Kersten, D. J., <sup>\*</sup>Olman, C. A. (2016). Responses in early visual areas to contour integration are context dependent. *Journal of Vision 16*(8): 19. https://doi.org/10.1167/16.8.19
- <sup>+</sup>Mannion, D. J., Kersten, D. J., <sup>\*</sup>Olman, C. A. (2015). Scene coherence can affect the local response to natural images in human V1. *European Journal of Neuroscience* 42:2895-2903. doi:10.1111/ejn.13082
- <sup>†</sup>Schallmo, M.-P., Sponheim, S. R., \*Olman, C. A., (2015). Reduced contextual effects on visual contrast perception in schizophrenia and bipolar affective disorder. *Psychological Medicine*, 45(16):3527-37. https://doi.org/10.1017/S0033291715001439
- Naselaris, T. J., <sup>C</sup>Olman, C. A., Stansbury, D. E., Gallant, J. L., Ugurbil, K. (2015). A voxel-wise encoding model for early visual areas decodes mental images of remembered scenes. *NeuroImage*, 105:215-228. https://doi.org/10.1016/j.neuroimage.2014.10.018
- Olman, C. A. (2015). What insights can fMRI offer into the structure and function of mid-tier visual areas? *Visual Neuroscience*, *32* E015. doi:10.1017/S0952523815000127
- <sup>+</sup>Mannion, D. J., Kersten, D. J., <sup>\*</sup>Olman, C. A. (2014). Regions of mid-level human visual cortex sensitive to the global coherence of local image patches. *Journal of Cognitive Neuroscience 26*(8):1764-1774. https://doi.org/10.1162/jocn a 00588
- <sup>†</sup>Thompson, S. K., Engel, S. A., Olman, C. A. (2014). Larger neural responses produce BOLD signals that begin earlier in time. *Frontiers in Neuroscience* 8:159. doi: 10.3389/fnins.2014.00159.
- \*Seo, D., <sup>C</sup>Olman, C. A., Haut, K. M., Sinha, R., MacDonald, A. W., & Patrick, C. J. (2014). Neural Correlates of Preparatory and Regulatory Control Over Positive and Negative Emotion. *Social, Cognitive and Affective Neuroscience* 9(4):494-504, doi: 10.1093/scan/nst115.
- <sup>†</sup>Qiu, C., Kersten, D. J., <sup>C</sup>Olman, C. A. (2013). Segmentation decreases the magnitude of the tilt illusion. *Journal of Vision 13*(13):19. https://doi.org/10.1167/13.13.19.
- <sup>+</sup>Mannion, D. J., Kersten, D. J., <sup>\*</sup>Olman, C. A. (2013). Consequences of polar form coherence for fMRI responses in human visual cortex. *NeuroImage*, 78:152-158. https://doi.org/10.1016/j.neuroimage.2013.04.036.
- <sup>†</sup>Schallmo M.-P., Sponheim S. R., <sup>\*</sup>Olman C. A. (2013) Abnormal contextual modulation of visual contour detection in patients with schizophrenia. *PLoS ONE 8*(6): e68090. doi:10.1371/journal.pone.0068090.
- White, T. J., Schmidt, M., Moeller, S., & <sup>C</sup>Olman, C. (2012). Evidence for intact local connectivity but disrupted regional function in the occipital lobe in children and adolescents with schizophrenia. *Human Brain Mapping 33*(8):1803-11. doi:10.1002/hbm.21321.

- <sup>L</sup>Olman C. A., <sup>+</sup>Pickett, K. J., <sup>†</sup>Schallmo, M.-P., & Kimberley, T. J. (2012). Selective BOLD responses to individual finger movement measured with fMRI at 3T. *Human Brain Mapping*, *33*(7):1594-606. doi:10.1002/hbm.21310.
- <sup>L</sup>Olman, C. A., Harel, N., Feinberg, D., He, S., Zhang, P., Ugurbil, K., & Yacoub, E. (2012). Layerspecific fMRI reflects different neuronal computations at different depths in human V1. *PLoS ONE* 7(3):e32536. <u>PMC3308958</u>. doi: 10.1371/journal.pone.0032536.
- <sup>†</sup>Schumacher, J. F., Quinn, C. F., & <sup>\*</sup>Olman, C. A. (2011). An exploration of the spatial scale over which orientation-dependent surround effects affect contour detection. *Journal of Vision*, *11*(8), 12. PMC3758228.
- <sup>†</sup>Schumacher, J. F., <sup>†</sup>Thompson, S. K., & <sup>\*</sup>Olman, C. A. (2011). Contrast response functions for single Gabor patches: ROI-based analysis over-represents low-contrast patches for GE BOLD. *Frontiers in Systems Neuroscience, 5*:19. PMC2904084.
- <sup>L</sup>Olman, C. A. &Yacoub, E. (2011). High-field fMRI for human applications: an overview of spatial resolution and signal specificity. *Open NeuroImaging Journal* 5:74-89. PMC3245408.
- <sup>L</sup>Olman C. A., Van de Moortele, P.-F., <sup>†</sup>Schumacher, J. F., Guy, J. R., Ugurbil, K., & Yacoub, E. (2010). Retinotopic mapping with spin echo BOLD at 7T. *Magnetic Resonance Imaging*, 28(9), 1258-1269. PMC2963715.
- <sup>†</sup>Schumacher, J. F. & <sup>\*</sup>Olman, C. A. (2010). High-resolution BOLD fMRI measurements of local orientation-dependent contextual modulation show a mismatch between predicted V1 output and local BOLD response. *Vision Research*, *50*(13), 1214-1224. PMC2904084. doi: 10.1016/j.visres.2010.04.005
- Moeller, S., Yacoub, E., <sup>C</sup>Olman, C. A., Auerbach, E., Strupp, J., Harel, N., & Ugurbil, K. (2010). Multiband multi-slice GE-EPI at 7 Tesla, with 16-fold acceleration using partial parallel imaging with application to high spatial and temporal whole-brain fMRI. *Magnetic Resonance in Medicine*, *3*(5), 1144-1153. PMC2906244.
- <sup>L</sup>Olman, C. A., Inati, S., & Davachi, L. (2009). Distortion and signal loss in medial temporal lobe. *PLoS One*, 4(12), e8160. PMC2780716.
- Van de Moortele, P.-F., Auerbach, E., <sup>C</sup>Olman, C. A., Yacoub, E., Ugurbil, K., & Moeller, S. (2009). T1 weighted brain images at 7 Tesla unbiased for proton density, T2\* contrast and RF coil receive B1 sensitivity with simultaneous vessel visualization. *NeuroImage*, 46(2), 432-446. PMC2700263.
- Mangia, S., Giove, F., Tkáč, I., Logothetis, N. K., <sup>C</sup>Olman, C. A., Maraviglia, B., Di Salle, F., & Uğurbil, K. (2009). Metabolic and hemodynamic events after changes in neuronal activity: current hypotheses, theoretical predictions and in vivo NMR experimental findings. *Journal of Cerebral Blood Flow and Metabolism, 29*(3), 441-463. PMC2743443.
- <sup>L</sup>Olman, C. A., Inati, S., & Heeger, D. J. (2007). The effect of large veins on spatial localization with GE BOLD at 3 T: displacement, not blurring. *NeuroImage, 34*, 1126-1135. doi: 10.1016/j.neuroimage.2006.08.045.
- Murray, S. O., <sup>C</sup>Olman, C. A., & Kersten, D. J. (2006). Spatially specific fMRI repetition effects in human visual cortex. *J Neurophysiology*, *95*, 2439-2445.
- Olman, C. A. & Kersten, D. J. (2004). Classification objects, ideal observers & generative models. *Cognitive Science*, 28, 227-239.
- <sup>L</sup>Olman, C. A., Schrater, P., Ugurbil, K., & Kersten, D. J. (2004). BOLD fMRI and psychophysical measurements of contrast response to broadband images. *Vision Research, 44*, 669-683. doi: 10.1016/j.visres.2003.10.022
- Kim, D.-S., Ronen, I., Olman, C. A., Kim, S.-G., Ugurbil, K., & Toth, L. J. (2004). Spatial relationship between neuronal activity and BOLD functional MRI. *Neuroimage*, 21(3), 876-885.
- <sup>L</sup>Olman, C. A., Ronen, I., Ugurbil, K., & Kim, D.-S. (2003). Retinotopic mapping in cat visual cortex using high field functional magnetic resonance imaging. *Journal of Neuroscience Methods*, 131, 161-170.
- <sup>L</sup>(Olman) Vrieze, C. A. and Lundin, D. J. (1998), "Matching the Model: Plastic Light Fiber Extraction

Targeted at SAE Specifications," SAE Technical Paper 980876, https://doi.org/10.4271/980876.

### Patents and Intellectual Property

- <sup>L</sup>Olman, C. A., Schroeder, K. M., & Lowe, R. H. (2004). Shallow depth back lit illuminated signage (US Patent No. 6821007).
- <sup>L</sup>(Olman) Vrieze, C. (2001). Method and apparatus for adjusting flux emitted from branched light guides (US Patent No. 20010036336A1).
- Freier, David G. and <sup>C</sup>(Olman) Vrieze, C. A. (2000). Articles with diffuse reflection of light from light fibers (US Patent No. 6123442A).

### Non-refereed Journal Articles, Essays, or Book Chapters

- Weldon, K., Burton, P. C., Grant, A. N., Yacoub E., Olman, C. A. (2019). "Defining region-specific masks for reliable depth-dependent analysis of fMRI data". BioRXiv https://doi.org/10.1101/557363
- De Martino, F., Olman, C. A., Valente, G. (2015). "Information Decoding from fMRI Images." Ch. 23 in Uludag, K., Ugurbil, K. & Berlizer, L. (Eds.) fMRI: From Nuclear Spins to Brain Function. New York, NY: Springer US.
- Pardo, J., Olman, C. A., Pardo, P. (2008). "Imaging and Psychiatry." Ch. 38 in Fatawi, S. H. & Clayton, P. (Eds.), Medical Basis of Psychiatry. Totowa, NJ: Humana Press Inc.
- Walsh, L. C. & Olman, C. A. (2011). "Making sense of what neuroimaging has to say about ASD and writing." In Walsh, L. C. & Gerstle, V. (Eds.), Helping students with autism spectrum disorders succeed in the college composition classroom: assessment, accommodation and pedagogy. Milwaukee, WI: Marquette University Press.

### **Open-source** textbooks

https://pressbooks.umn.edu/fmribasicprinciples. Created Spring semester, 2021

https://pressbooks.umn.edu/sensationandperception. Created by students of PSY 3031 in Spring semester, 2020, and edited by subsequent classes.

### Coverage in the media

Podcast from Dialogue Minnesota: <u>https://www.dialogueminnesota.com/episodes/2019/12/17/u-of-m-partners-with-st-paul-middle-school-to-promote-diversity-in-stem</u>

### **Publications Submitted or in Progress**

- <sup>+</sup>Pokorny, V. J., Schallmo, M.-P., Sponheim, S. R. <sup>\*</sup>Olman, C. A. (under review, *Journal of Vision*). Weakened untuned gain control is associated with schizophrenia while atypical orientation-tuned suppression depends on visual acuity.
- Reinke, M., Chowdhury, L., Longnecker, J., Thai, M., Horek, N., Begnel, E., <sup>C</sup>Olman, C. A., Cullen, K.R., & Klimes-Dougan, B. (under review, Psychopathology). Behavioral apophenia and dimensions of psychoticism: A pilot study of adolescents with mood disorders.
- Dowdle, L. T., Vizioli, L., Moeller, S., <sup>C</sup>Olman, C. A., Ghose, G., Yacoub, E. Ugurbil, K. (in revision). Improving sensitivity to functional responses without a loss of spatiotemporal precision in human brain imaging.
- Semaya, E., Weldon, K. B., Olman, C. A. (Master's thesis, submission pending). Surround suppression in broadband images is weakly tuned to scene statistics.
- Schallmo, M.-P., Weldon, K. B., Kamath, R. S., Moser H. R., Montoya, S. A., Killebrew, K. W., Demro,

C., Grant, A. N., Marjańska, M., Sponheim, S. R., Olman, C. A. (final states of preparation). The Psychosis Human Connectome Project: Design and rationale for studies of visual neurophysiology.

Dowdle, L., Olman, C. A. (final stages of preparation). Long-scale noise correlations can serve as a gray matter marker.

### Presentations, Posters, and Exhibits

### Invited Presentations at Professional Meetings, Conferences, etc.

- "Small, smaller, smallest: pushing the limits of spatial resolution", Brain Function Study Group, International Society for Magnetic Resonance in Medicine, July 12, 2021.
- "pressbooks.umn.edu/classroompartners" at Community-Engaged Teaching Strategies during COVID-19, University of Minnesota, May 11, 2020.
- "Whatever gives me lots of good signal" at the Layer fMRI "Dinner" re-scheduled to an online venue from planned venue at the International Meeting for the Society for Magnetic Resonance in Medicine, Sydney, Australia. May 7, 2020.
- "Refining our methods for depth-dependent fMRI." University of Cambridge, United Kingdom, June 22, 2018.
- "Does high-field, high-resolution fMRI offer any advantages for perception research?" University of Giessen, Germany, October 14, 2015.
- "Functional MRI cannot single-handedly discover novel aspects of visual information encoding in the human brain." PRISM Conference, Leuven, Netherlands, October 6-8, 2015.
- "Can we make useful inferences about neuronal responses from fMRI data?" MIND Research Network, Albuquerque, NM, March 20, 2015.
- "Functional MRI cannot single-handedly discover novel aspects of visual information encoding in the human brain", Vision Symposium, University of Minnesota, April 10, 2015.
- "Separating different contributions to the BOLD response", UMRAM, Bilkent University, Ankara, Turkey, October 25, 2013.
- "Diversity in the Neural Code: Which Activity Are We Trying to Infer?", Minnesota High-field Workshop, U of M Center for Magnetic Resonance Research, Minneapolis, MN, October, 2011.
- "Perception is relative: Behavioral, computational, and imaging studies of contextual modulation of lowlevel visual representations," Biology Department Colloquium Series, University of Wisconsin, Eau Claire, WI, September, 2011.
- "Detailed measurements of early visual responses using fMRI at 7 Tesla," Section on Functional Imaging Methods, National Institute of Mental Health, Bethesda, MD, December, 2009.
- "Neuroscience-related human applications at 7 Tesla," at the International Society for Magnetic Resonance in Medicine's 2008 High-Field Workshop, "What's Special about 7T+?", Rome, Italy, October, 2008.
- "Careers in Neuroscience" (4-member panel), St. Olaf College, Northfield, MN, May 2007.
- "Neuroimaging Ethics," 2-member panel discussion at the MacAlester Mid-Brains conference, MacAlester College, St Paul, MN, April, 2007.
- "fMRI: Do We See What We Want to See?" Graduate Women in Science, chapter meeting, St. Paul, MN, March, 2006.

#### Abstracts (published in electronic or paper format that are archived or searchable)

Stopped updating in 2020, on the assumption that meaningful conference papers will eventually turn into publications, and a pattern of mentorship that sends to students to conferences is established.

Key for student presenters: served as <sup>†</sup>primary advisor or <sup>+</sup>faculty mentor.

- <sup>†</sup>Navarro, K. T., Weldon, K. B., Sanchez, M. J., Tregillus, K. E. M., Olman, C. A. Structural Measures of Magno- and Parvocellular Projections in Visual Cortex Using Ultra-High Field fMRI. Society of Neuroscience 49th annual meeting. Chicago, Illinois, USA, October 22, 2019.
- <sup>†</sup>Semaya, E. S., Weldon, K. B., Olman, C. A. Broadband Surround Suppression. Society of Neuroscience 49th annual meeting. Chicago, Illinois, USA, October 21, 2019.
- <sup>†</sup>Navarro, K. T., Weldon, K. B., Sanchez, M. J., Tregillus, K. E. M., Engel, S. A., Olman, C. A. A Structural Exploration of Magno- and Parvocellular Projections in Visual Cortex with Ultra-High Field fMRI. 42nd edition of the European Conference on Visual Perception, Leuven, Belgium, August 27, 2019
- Weldon, K. B., Sanchez, M. J., Burton, P.C., & Olman, C.A. Eye selectivity peaks in middle layers of human visual cortex: Evidence from 7T fMRI data. Poster session presented at: 25th Annual Organization for Human Brain Mapping Meeting. Rome, Italy, 9-13 June, 2019.
- <sup>†</sup>Espensen-Sturges, T. D., Burton, P. C., Sponheim, S. R., & Olman, C. A. (2018). "Relationship between iterative visual processing deficits and psychotic symptoms". Vision Sciences Society, St Pete's Beach. FL. *Journal of Vision 18*:33.
- Olman, C. A., Burton, P. C., Grant, A. N., Weldon, K., Yacoub, E. (2018). "An automated method for assessing the accuracy of cross-modal registration in high-field fMRI", *27th Annual Conference and Exhibition, International Society of Magnetic Resonance in Medicine*, June, 2018, Paris, France.
- Weldon, K.B., Schallmo, M.-P. Burton, P. C., Grant, A. N. & Olman, C. A. (2017) Evidence of modulation of laminar profiles by contextual modulation in V1 using high-resolution fMRI. Electronic poster session presented at: 26th Annual International Society for Magnetic Resonance in Medicine Meeting; 2017 22-27 April; Honolulu, HI, USA.
- Olman, C. A., Kohn, A., Naselaris, T., Peirce, J., Schwartz, O. (2017). "Building a better model of V1". Vision Sciences Society, St Pete's Beach. FL. *Journal of Vision 17*:780.
- Olman, C. A. (2016) "Virtual V1sion: a collaborative coding project" MODVIS, May 12-14, 2016, St Pete's Beach, FL.
- Breedlove, J., St Yves, G., <sup>C</sup>Olman, C. A., Naselaris, T. N. (2015). "Imagery receptive fields." *Vision Sciences Society Annual Meeting*, May, 2015, St. Pete's Beach, FL. *Journal of Vision 16*:126.
- <sup>†</sup>Espensen-Sturges, T., Hendrickson, T., Grant, A., Sponheim, S., & Olman, C. (2016). Visual Attention and Eye Movement Deficits in Patients with Traumatic Brain Injury. *Vision Sciences Society Annual Meeting*, May, 2015, St. Pete's Beach, FL. *Journal of Vision*, *16*(12), 1337-1337.
- <sup>†</sup>Qiu, C., Kersten, D. J., <sup>\*</sup>Olman, C. A. "Ellipses look like polygons after fast repeated presentation." *Vision Sciences Society Annual Meeting*, May, 2015, St. Pete's Beach, FL. *Journal of Vision* 15(12):529.
- <sup>†</sup>Carpenter, Brent C., Kersten, D. J., <sup>\*</sup>Olman, C. A. "Detection of unusual shadows is faster in scenes with weaker 3D cues." *Vision Sciences Society Annual Meeting*, May, 2015, St. Pete's Beach, FL. *Journal of Vision 15*(12):.
- \*Schallmo, M.-P., Sponheim, S. R., \*Olman, C. A. "Reduced Contextual Effects on Contrast Perception in Schizophrenia and Bipolar Affective Disorder." *Vision Sciences Society Annual Meeting*, May, 2015, St. Pete's Beach, FL. *Journal of Vision 15*(12):553.
- Hendrickson, T. J., Grant, A. N., \*Olman, C. A. "Imaging resolution affects neural response property estimation." *Vision Sciences Society Annual Meeting*, May, 2015, St. Pete's Beach, FL. *Journal of Vision 15*(12):997.
- Kang, S.-S., <sup>†</sup>Schallmo, M.-P., Van Meerten, N., <sup>†</sup>Qiu, C., <sup>C</sup>Olman, C. A., Sponheim, S. R. "Neural mechanisms of local and distant visual context modulation in schizophrenia." 15<sup>th</sup> International Conference on Schizophrenia Research, March, 2015, Colorado Springs, CO. Schizophrenia Bulletin 41, S227-228.
- Sponheim, S. R., <sup>†</sup>Schallmo, M.-P., <sup>†</sup>Qiu, C., <sup>\*</sup>Olman, C. A. "A computational model of low and high

level influences on visual perceptual abnormalities in schizophrenia." 15<sup>th</sup> International Conference on Schizophrenia Research, March, 2015, Colorado Springs, CO. Schizophrenia Bulletin 41, S97.

- <sup>†</sup>Qiu, C., Kersten, D. J., <sup>\*</sup>Olman, C. A. "The effect of attention and dot coherence on fMRI responses to 3D structure-from-motion." *Vision Sciences Society Annual Meeting*, May, 2014, St. Pete's Beach, FL. *Journal of Vision 14*(10):296.
- Olman, C. A., Bao, P., Engel, S. A., Grant, A. N., Purington, C., Qiu, C., Schallmo, M.-P., Tjan, B. "Do hemifield representations co-opt ocular dominance column structure in achiasma?" *Vision Sciences Society Annual Meeting*, May, 2014, St. Pete's Beach, FL. *Journal of Vision 14*(10):377.
- <sup>†</sup>Schallmo, M-P., Brancel, S. R., Grant, A. N., <sup>S</sup>Olman, C.A.. "Localized BOLD fMRI Responses in V1 Reflect<sup>1</sup>/<sub>SEP</sub> a Task-Dependent Mixture of Luminance Contrast and Pattern Context during Iso-Orientation Surround Suppression ." *Vision Sciences Society Annual Meeting*, May, 2014, St. Pete's Beach, FL. *Journal of Vision 14*(10):216.
- Naselaris T., <sup>C</sup>Olman, C., Stansbury, D., Gallant, J.L., Ugurbil, K. (2013) Decoding mental images of remembered scenes using a model of early visual processing. *Society for Neuroscience Annual Meeting*, November, 2013, San Diego, CA.
- Mannion, D. J., Kerten, D. J., <sup>C</sup>Olman, C. A. "Reduced V1 activity to local image patches that are inconsistent with the global scene interpretation" *ACNS-2013 Australasian Cognitive Neuroscience Society Conference*, November, 2013, Melbourne, Australia.
- <sup>†</sup>Qiu, C., Kersten, D. J., <sup>\*</sup>Olman, C. A. "Interregional connections across early visual areas in contour processing." *Vision Sciences Society Annual Meeting*, May, 2013, Naples, FL. *Journal of Vision 13*(9):1039.
- <sup>†</sup>Schallmo, M-P., Qiu, C., Yacoub, E., <sup>S</sup>Olman, C.A.. "Examining the Laminar Profile of Surround Suppression in V1 using High Resolution fMRI at 7 Tesla." *Vision Sciences Society Annual Meeting*, May, 2013, Naples, FL. *Journal of Vision 13*(9):34.
- <sup>†</sup>Qiu, C., Kersten, D. J., <sup>\*</sup>Olman, C. A. "Segmentation effects on the tilt illusion: contrast and depth." *Vision Sciences Society Annual Meeting*, May, 2012, Naples, FL. *Journal of Vision 12*(9):1291.
- <sup>†</sup>Mulligan, M.-K., Kersten, D. J., <sup>\*</sup>Olman, C. A. "Perceptual modulation of V1 in the bistable translating diamond task is not retinotopically targeted." *Vision Sciences Society Annual Meeting*, May, 2012, Naples, FL. *Journal of Vision 12*(9):1292.
- <sup>†</sup>Schallmo, M.-P., Sponheim, S. R., <sup>\*</sup>Olman, C. A. "Orientation Tuning in Schizophrenia Measured Using Reverse Correlation Psychophysics." *Vision Sciences Society Annual Meeting*, May, 2012, Naples, FL. *Journal of Vision 12*(9):88.
- Adriany, G., Waks, M., Tramm, B., Schillak, S., Yacoub, E., de Martino, F., Van de Moortele, P.-F., Naselaris, T., <sup>C</sup>Olman, C., Vaughan, T., Ugurbil, K., "An Open Faced 4 ch. Loop Transmit / 16 ch. Receive Array Coil for HiRes fMRI at 7 Tesla", 20th Annual Conference and Exhibition, International Society of Magnetic Resonance in Medicine, May, 2012, Melbourne, Australia.
- <sup>†</sup>Schallmo, M.-P., Marjanska, M., Sponheim, S. R., <sup>\*</sup>Olman, C. A. "Schizophrenia affects contextual modulation during contour detection." *Society for Neuroscience Annual Meeting*, November, 2011, Washington, D.C.
- <sup>L</sup>Olman, C. A. "Failures of inference: challenges for interpreting localized fMRI measurements of visual features." *Vision Sciences Society Annual Meeting*, May, 2011, Naples, FL. *Journal of Vision 11*(11):1199.
- <sup>†</sup>Schallmo, M.-P., Sponheim, S. R., <sup>L</sup>Olman, C. A. "Contextual Modulation of Contour Detection is Altered in Schizophrenia." *Vision Sciences Society Annual Meeting*, May, 2011, Naples, FL. *Journal of Vision 11*(11):1050.
- <sup>L</sup>Olman, C. A., Harel, N., Feinberg, D., Ugurbil, K., Yacoub, E. "Layer-specific fMRI provides evidence of neuronal computations in human primary visual cortex." *Society for Neuroscience Annual Meeting*, November, 2010, San Diego, CA.
- <sup>\*</sup>Olman, C. A., <sup>†</sup>Schumacher, J. F., <sup>†</sup>Thompson, S. K., "Non-linear BOLD response to low-contrast Gabor elements," *Vision Sciences Society Annual Meeting*, May, 2010, Naples, FL. Published in Journal

of Vision 10(7):916.

- <sup>†</sup>Schumacher, J. F., Quinn, C. F., <sup>\*</sup>Olman, C. A., "Parameter exploration of contextually modulated collinear Gabor patches," *Vision Sciences Society Annual Meeting*, May, 2010, Naples, FL. Published in Journal of Vision 10(7):1158.
- Pickett, K. P., <sup>C</sup>Olman, C. A., Schallmo, M.-P., Kimberley, T. J. "Cortical mapping during individuated finger movements." *Society for Neuroscience Annual Meeting*, October, 2009, Chicago, IL.
- <sup>C</sup>Olman, C. A., Boyaci, H., Fang, F., Doerschner, K., "Receptive field properties of V1 neurons coding for luminance histogram skew," *Vision Sciences Society Annual Meeting*, May, 2009, Naples, FL.
- <sup>L</sup>Olman, C. A., Moeller, S., <sup>†</sup>Schumacher, J. F., <sup>†</sup>Thompson, S. K., Auerbach, E. J., Ugurbil, K., Yacoub, E., "Investigating the whole brain with 1.5mm isotropic resolution and 1.5s TRs using highly accelerated high-field fMRI", *17th Annual Conference and Exhibition, International Society of Magnetic Resonance in Medicine*, April, 2009, Honolulu, Hawaii, USA.
- Yacoub, E. Y., Ugurbil, K., Feinberg, D., <sup>L</sup>Olman, C. A., "Feasibility of detecting differential layer specific activations in humans using SE BOLD fMRI at 7 T," *17th Annual Conference and Exhibition, International Society of Magnetic Resonance in Medicine*, April, 2009, Honolulu, Hawaii, USA.
- Moeller S, Auerbach E, <sup>C</sup>Olman CA, Yacoub E, Ugurbil K. "Unaliasing of multiband multislice EPI and GRE imaging with GRAPPA," *17th Annual Conference and Exhibition, International Society of Magnetic Resonance in Medicine*, April, 2009, Honolulu, Hawaii, USA.
- <sup>†</sup>Thompson, S. K., <sup>†</sup>Schumacher, J. F., <sup>C</sup>Olman, C. A., Engel, S. A., "Stronger functional MRI responses begin earlier in time," *Society for Neuroscience Annual Meeting*, November, 2008, Washington D.C.
- <sup>c</sup>Olman, C. A., Boyaci, H., Fang, F., Doerschner, K. "V1 responses to different types of luminance histogram contrast" (poster presentation). *Vision Sciences Society Annual Meeting*, May, 2008, Naples, FL.
- <sup>†</sup>Schumacher, J. S., \*Olman, C.A., "7T Spin Echo Sequences Provide Improved Spatial Accuracy in BOLD fMRI Experiments," *Vision Sciences Society Annual Meeting*, May, 2008, Naples, FL.
- <sup>†</sup>Thompson, S.K., Kersten, D. J., <sup>C</sup>Olman, C.A., "V1 BOLD response to image regions defined by 1st and 2nd order luminance contrast" (poster presentation). *Vision Sciences Society Annual Meeting*, May, 2008, Naples, FL.
- <sup>L</sup>Olman, C. A., Van de Moortele, P.-F., Ugurbil, K., Yacoub, E. "Retinotopic mapping with 7 Tesla fMRI: improved resolution and decreased experiment duration "(oral presentation). *Society for Neuroscience Annual Meeting*, November, 2007, San Diego, CA.
- <sup>†</sup>Schumacher, J. F., \*Olman, C. A., "BOLD fMRI response to local neural inhibition," *Vision Sciences Society Annual Meeting*, May, 2007, Sarasota, FL.
- <sup>L</sup>Olman, C. A., Inati, S., Heeger, D. J., "Spatial localization with 3T GE BOLD: dependence on experiment design and resolution" (oral presentation). *Vision Sciences Society Annual Meeting*, May, 2006, Sarasota, FL.

### TEACHING

#### **Scheduled Teaching**

#### **Current offerings**

PSY 1925:	Neuroimaging in Psychology. Freshman seminar, offered annually.	2022-
PSY 3031:	Sensation and Perception. Undergraduate level, offered annually.	2008-
GCC 3026:	Stepping into the gap: understanding the barriers to diversity in STEM.	2018-
	Undergraduate level, offered annually although COVID-19 and changes to	
	state science standards have necessitated a hiatus; offered in pilot version	

	as PSY 5960, Fall 2016; PSY 3996, Fall 2017.	
PSY 5993:	Functional Imaging of Visual Processes (undergraduate and graduate level,	2008-
	annually)	

## Past offerings

PSY 5065:	<i>Functional Imaging: Hands-On Training.</i> Undergraduate and graduate level. Offered as PSY 8960 for graduate level only for several years, then	2007-2021
	for mixed audience for 2009-2021, then converted to online textbook and	
	online MRI Simulator.	
PSY 8960:	Graphics for Vision Scientists (graduate level). Offered once; well-received	2014
	but other courses are more important.	
PSY 8960:	fMRI: Biological Basis and Experimental Design (graduate level).	2006-2008
	Replaced by PSY 5063, taught by colleagues.	
BPHY 8147	1: Advanced Physics of MRI	2005, 2006

## **Instructional Activity**

## University of Minnesota

Guest lecture, "Magnetic Resonance Imaging": 1 lab in NSC 5561	2005-
for ~24 graduate students	
Guest lecture, "Human neuroimaging": 1 lecture in OUE 1830	2022
for ~90 undergraduates	
Guest lecture, "Choosing a mentor": 1 lecture in NSC 8321	2018, 2019
for ~18 graduate students	
Guest lecture, "Public Engagement": 1 lecture in NSC 8321	2018, 2019
for ~18 graduate students	
Guest lecture, "Writing 1": 1 lecture in NSC 8321	2014, 2015
~for 18 graduate students	
Guest lecture, "Human Subjects": 1 lecture in NSC 8321	2014, 2015
~for 18 graduate students	
Guest lecture, "fMRI: physics and applications": 1 lecture in Law 6063	2012, 2013
~for 18 law students	

# **CURRICULUM DEVELOPMENT**

## **Curriculum Development Activities**

<i>Functional Imaging: Hands-On Training (PSY 5065):</i> created Matlab <sup>TM</sup> -based	2016
software to simulate the image acquisition process and provide students with a	
tool that will let them manipulate pulse sequence parameters and inspect the	
effect on image quality without paying for scanner time. Secured internal grant	
to convert this tool to a web-hosted Python-based tool	
(https://mrisim.psych.umn.edu).	
Introduction to Sensation and Perception (PSY 3031): applied for and received \$1,500	2015
Partnership for Affordable Content grant to begin identifying open access	
resources to replace the textbook.	
Introduction to Sensation and Perception (PSY 3031): received \$11,000 through the	2011

Page 15 of 21

*Course Transformation Program* to transform the lecture-based class into a hybrid online/lab section format that allows hands-on demonstration and small-group interaction with the professors without decreasing the number of seats we are able to provide each semester.

### Faculty Development Activities regarding teaching

"Transforming Your Syllabus", 4-hour workshop provided by The Institute for	Fall 2014
Diversity, Equity and Advocacy (IDEA), a unit of the Office for Equity and	
Diversity, and the Center for Teaching and Learning.	
"Lunch with a great teacher," Center for Teaching and Learning	Spring 2008

### **Collaborative Efforts and Activities**

Advanced Physics of MRI, BPhy 8147 / Psy 8960. Instructor of record, one of 4 2006, 2007 instructors.

### **ADVISING AND MENTORING**

### **Undergraduate Students Advised**

### Advisees

Laura Potter, Psychology Honors Thesis Kristen Isensee, Psychology Honors Thesis	Fall 2007 Fall 2007
Kori Skrypek, Psychology Honors Thesis	Fall 2009
Other Advising Activities	
Directed research students participating in PSY 5993 are not listed individually, 5-7 students eacy year	2008-
David Do, UROP	Spring 2010
Graduate Student Activities	
Advisees	
Qi Chen, Ph.D. program	2022-
Joseph Emerson, Ph.D. candidate, Graduate Program in Neuroscience	2020-
Karen Navarro, Ph.D. candidate, Department of Psychology	2018-
Emily Semaya, M.S., Graduate Program in Neuroscience "Broadband Surround Suppression"	2018-2019
Victoria Espensen-Sturges, Ph.D., Department of Psychology	2015-2017
"Local and Iterative Visual Processing Deficits in Schizophrenia"	
Brent Carpenter, Ph.D. program, Department of Psychology	2013-2015
Transferred to another laboratory to pursue different research interests	
Cheng Qiu, Ph.D., Department of Psychology	2011-2015
"Modulation by visual context beyond local features"	

Michael-Paul Schallmo, Ph.D., Graduate Program in Neuroscience	2010-2014
"Neural Mechanisms of Visual Context Processing in Healthy Adults and those	
with Schizophrenia"	
Jennifer Frances Schumacher, Ph.D., Graduate Program in Neuroscience	2006-2010
"Human neurophysiological mechanisms of contextual modulation in primary	
visual cortex"	
Serena Kainoa Au Thompson, M.D./Ph.D., Graduate Program in Neuroscience	2006-2009
"Temporal and spatial properties of the BOLD fMRI response to first and second	
order contrast in V1"	

### **PhD** Committees

Sam Klein, Ph.D. Program, Department of Psychology	2021-
Samantha Montoya, Ph.D. candidate, Graduate Program in Neuroscience	2021-
Haleigh Mulholland, Ph.D. candidate, Graduate Program in Neuroscience	2019-
Julia Longenecker, Ph.D. Program, Department of Psychology	2018
Emily Allen, Ph.D. Program, Department of Psychology	2018
Chiahao Lu, Ph.D. Program, Department of Kinesiology	2013
Shinho Jo, 1 <sup>st</sup> Year Project, Ph.D. Program, Department of Psychology	2012
Chris Kallie, Ph.D. Program, Department of Psychology	2012
Anusha Mishra, Ph.D., Graduate Program in Neuroscience	2011
Rachel Force, Ph.D., Clinical Program, Department of Psychology	2010
Kristen Pickett, Ph.D., Department of Kinesiology	2010
Dongju Seo, Ph.D., Clinical Program, Department of Psychology	2007

## POST DOC, RESIDENT, AND TRAINEE SUPERVISION/MENTORSHIP

## Post-doctoral trainees supervised

Jessica Breedlove, Post-doctoral associate, Department of Psychology	2020-present
Primary supervisor	
Kimberly Weldon, Post-doctoral associate, Departments of Radiology, Psychology	2016-2020
and then Psychiatry	
Primary supervisor	
Damien Mannion, Post-doctoral associate, Department of Psychology	2011-2013
Joint supervisor with Professor Daniel J. Kersten	

## MENTORING/CAREER ADVISING

Yoon-Gi Chung, Ph.D. candidate, Korea University	July-August
Hosted extended data collection visit.	2012
Shuguang Kuai, post-doctoral fellow, University of Birmingham, UK	August
Hosted extended data collection visit.	2011
Thomas Naselaris, post-doctoral fellow, University of California, Berkeley	June-Dec.
Hosted extended data collection visit.	2011

## SERVICE

## Service to the Discipline

## Editorships/Journal Reviewer Experience

Editorial Board, Frontiers of Human Neuroscience (2 hours/year) Associate Editor, Research Topic "What can fMRI tell us about the neural code",	2015-present 2017-2018
Frontiers of Human Neuroscience (20 hours/year)	
Submission reviewer, Computational and Cognitive Neuroscience Conference (20	2018
hours)	
Ad hoc reviewer for the following journals (30 hours/year):	
Brain and Cognition, 2011	
Cerebral Cortex, 2010, 2017	
Current Biology, 2008, 2020	
European Journal of Neuroscience, 2011	
Frontiers in Human Neuroscience, 2010, 2016, 2018, 2019, 2021	
Human Brain Mapping, 2011, 2014	
International Journal of Imaging Systems and Technology, 2008	
Investigative Ophthalmology and Visual Science, 2014*, 2015*, 2016, 2017	
Journal of Abnormal Psychology, 2017	
Journal of Neurophysiology, 2007, 2010, 2012, 2014, 2016	
Journal of Neuroscience, 2014, 2016, 2019	
Journal of Psychopharmacology, 2017	
Journal of Vision, 2011, 2012, 2014, 2015, 2017, 2018*, 2020, 2021	
Journal of Visualized Experiments, 2011, 2014	
Nature Neuroscience, 2011	
Nature Communications, 2021	
NeuroImage, 2009, 2010, 2011, 2012, 2016, 2017, 2018, 2019, 2020, 2021	
NeuroReport, 2009	
PLoS ONE, 2010, 2011, 2012, 2015, 2016, 2017, 2019	
PLoS Biology, 2020	
Proceedings of the National Academy of Sciences, 2010, 2011, 2012	
Progress in Neurobiology, 2020	
Science, 2019	
Science Advances, 2016	
Scientific Reports, 2015	
* Received Outstanding Review award	

# Review panels for external funding agencies, foundations, etc.

NIH Neural Basis of Visual Perception Study Section member (120 hours/year)	2022-2026
NSF-GRFP panel (30 hours)	2022
NIH remote review, R13 proposal (5 hours)	2021
National Science Foundation, Cognitive Science Review Panel (6 hours/year)	2009, 2020
National Institutes of Health, SPC Study Section ad hoc member (40 hours/year)	2017, 2019
National Institutes of Health, BRAIN U01 special emphasis section (40 hours/year)	2018
Biotechnology and Biological Sciences Research Council (UK), grant reviewer (4	2016, 2018,
hours/year)	2022
Minnesota UMN/Mayo Partnership Grant review panel (16 hours/year)	2012, 2015
MS Research Australia, grant review (4 hours)	2012

# Organization of Conferences, Workshops, Panels, Symposia

FMRI and Optical Imaging sessions, October 20, 2021, for the Biennial	October 20, 2021
Minnesota High-field Workshops, Center for Magnetic Resonance	
Research, University of Minnesota, Minneapolis, MN. 80 hours.	
Depth-resolved fMRI Hands-on Workshop, Funded by Brain Imaging Grant from	Nov. 12-13, 2019
College of Liberal Arts; satellite event for Biennial Minnesota High-field	
Workshops, CMRR, University of Minnesota, Minneapolis, MN. 60 hours	
Bridging Animal and Human Brain Research with fMRI. Satellite event for the	April 11, 2019
Annual BRAIN Investigators' Conference, Washington, DC. 40 hours	
fMRI: Hands-on Training, as part of the Biennial Minnesota High-field	Oct. 9-10, 2013
Workshops, CMRR, University of Minnesota, Minneapolis, MN. 60	Oct. 5-6, 2007
hours/event	Oct. 9-10, 2005

# Service to the University of Minnesota

Commitments requiring more than 20 hours/year are in italics

## University-wide Service

Member, Office for Public Engagement Footprint Committee	2022-
Member, Doctoral Dissertation Fellowship evaluation committee	2020-
Coordinator, STEM sub-group of campus-wide Precollege Network, coordinating	2020-present
youth-directed public engagement activities across campus	
Chair, Engagement Committee, Graduate Program in Neuroscience (40 hours/year)	2018-2022
Member, Steering Committee, Graduate Program in Neuroscience	2018-2022
Bell Museum: science advisor for Boston Scientific grant to develop experiential	2020
Bell Museum: Science advisor for Mysteries of Your Brain planetarium show	2019-2020
Bell Museum: Advisor and lab tour host for Brain Power summer camp	2019-2020
Member, Grand Challenges Course Proposal review committee	Spring 2020
Member, Institutional Review Board, Medical Committee (120 hours/year)	2013-2016
Member, Academic Health Center-Faculty Research Development grant review panel	Fall 2015
co-PI, "New infrastructure for campus-wide access to 3T MRI", successful application	April, 2011
for funds through the Office of the Vice President for Research's Infrastructure	-
Investment Initiative, securing \$1.5 million to support the purchase of a 3 Tesla	
scanner.	
Visual Neuroimaging Technician Search Committee, Chair	Fall 2011

# Service to the College

Representative on College of Liberal Arts Assembly	2017-2019
	2012-2014
Parliamentarian, College of Liberal Arts Assembly	2013-2014
Member, Talle Family Scholarship award/review committee	Spring 2014
Member, Budget Advisory Committee, College of Liberal Arts Assembly	2012-2014
Chair, Neuroimaging Staff Position Search Committee	Spring 2008

## Service to the Department

2020-2022
2020-2022
2008-2013
2019-2020
2019-2021
2014-2015
2013-2019
2017-2018
2013-2014
2012-2013
2006-2007
2007-2009
2005-2009

## Public and External Service

Commitments requiring more than 20 hours/year are in italics	
Classroom Partners. Worked with University Honors Program and Center for Community Engaged Learning to create a system for placing University of Minnesota undergraduates in science classrooms to support middle-school science curriculum. 80 hours/year.	2018-
<i>Brain Zoo.</i> Created https://sites.google.com/d.umn.edu/brain-zoo/home repository MRI scans of animal brains and corresponding STL files and infographics for education and outreach projects. Development involves international collaboration with researchers in South Africa and France.	2018-
Dessa with the Minnesota Orchestra, April 14-15, 2017. We spent November 2016 - February 2017 partnering with Dessa to produce a small-scale fMRI study of emotional attachment to support her performance with the Minnesota Orchestra. Corresponding TED talk is <u>here</u> . 40 hours/year.	2016-2017
<ul> <li>Murray Middle School, Mentoring and Tutoring:</li> <li>Initiated a Science Fair mentoring program, connecting students with mentors from the University to work on Science Fair Projects, 40 hours/year.</li> </ul>	2015-2016
<ul> <li>Created "Picture yourself at the U" Day, bringing small groups of low-income 7<sup>th</sup> and 8<sup>th</sup>-graders to visit laboratories and learn about academic resources at the University of Minnesota.</li> </ul>	2014-2017
<ul> <li>Pilot One-on-One Tutoring program: meeting with at-risk students for three, hour-long one-on-one tutoring sessions each week. 90 hours/year.</li> </ul>	2013-2016
- Science Fair Judge	2014-2020
Twin Cities Regional Science Fair Judge, annually in February	2014-2020
"Perception" presentation as part of a panel discussion "Understanding our Biases", Guardian <i>Ad Litem</i> training workshop, Minnesota State Judicial System. March 30, 2012. The GAL program provides volunteer advocates for children involved in litigation in the family court system.	2012
"MRI: Neuroscience Applications," 3-hour lecture and demonstration as a part of BrainU, a summer teacher training program hosted by the Department of Neuroscience for middle- and high-school teachers from around the state. (each summer, 2009-2011, odd summers after that)	2009-2015
Brain Awareness Week: spending a day at a local elementary school to lead neuroscience presentations in 4 <sup>th</sup> and 5 <sup>th</sup> grade classes (2006, 2008, 2011, 2012,	2006-2017

2014, 2015, 2016, 2017) "Sven studies the brain": collaboration with Dr. Kimberley, Department of Physical Therapy, to create a Simply Science segment for Kare 11 on using fMRI to study	2007
the brain.	
Neuroscience Table at the State Fair, AHC booth in U of M building – 4h shift	2006, 2013
Dozens of tours of CMRR, for example: 5 <sup>th</sup> grade class from Brainerd (April 2006,	ongoing
2007), high school classes from around the city and state, undergraduate classes	
from UW Eau Claire (2006-2010), Macalester (November 2006, 2008), graduate	
program recruitment weeks for Neuroscience & Psychology (2006-present)	