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# Matthew Whiteway

EDUCATION	<p><b>University of Maryland</b>, College Park, MD Ph.D. Student in Applied Mathematics and Scientific Computing Advisor: Dr. Daniel Butts Anticipated Graduation: May 2018</p> <p><b>University of Oklahoma</b>, Norman, OK B.Sc. in Physics, B.A. in Mathematics May 2011</p>
SCHOLARSHIPS AND AWARDS	<ul style="list-style-type: none"><li>• Center for Comparative and Evolutionary Biology of Hearing Trainee Grant (Summer 2015 - Summer 2016)</li><li>• Excellence in Teaching Award, University of Maryland Department of Mathematics (2013)</li><li>• J. Clarence Karcher Scholarship, University of Oklahoma Department of Physics and Astronomy (Fall 2009 - Spring 2011)</li><li>• National Merit Scholarship (Fall 2006 - Spring 2011)</li></ul>
PUBLICATIONS	<p><b>Whiteway MR</b>, Bartolo R, Averbeck BB and Butts DA (<i>in prep</i>). Decoding neural population activity within a latent variable framework.</p> <p>Liu J, <b>Whiteway MR</b>, Butts DA and Kanold, PO (<i>submitted</i>). Differential organization of the mouse auditory cortex to tone onset and offset revealed using automated image segmentation.</p> <p><b>Whiteway MR</b> and Butts DA (2017). Revealing unobserved factors underlying cortical activity using a rectified latent variable model applied to neural population recordings. <i>Journal of Neurophysiology</i>, 117(3), 919-936.</p> <p>Stout J, <b>Whiteway M</b>, Ott E, Girvan M and Antonsen TM (2011). Local synchronization in complex networks of coupled oscillators. <i>Chaos: An Interdisciplinary Journal of Nonlinear Science</i>, 21(2), 025109.</p>
CONFERENCE ABSTRACTS	<p><b>Whiteway MR</b>, Bartolo R, Averbeck BB and Butts DA (<i>accepted</i>). Decoding neural population activity within a latent variable framework. <i>Computational and Systems Neuroscience</i>, Denver, CO, March 2018.</p> <p><b>Whiteway MR</b>, Bartolo R, Averbeck BB and Butts DA. Unsupervised nonlinear dimensionality reduction of large-scale neural recordings in prefrontal cortex. <i>Society for Neuroscience</i>, Washington, D.C., November 2017.</p> <p>Liu J, <b>Whiteway MR</b>, Butts DA and Kanold PO. Differential organization of the mouse auditory cortex to tone onset and offset revealed using automated image segmentation. <i>Society for Neuroscience</i>, Washington, D.C., November 2017.</p>

**Whiteway MR**, Socha K, Bonin V and Butts DA. Nonlinear latent variable approaches for understanding population activity in sensory cortex. *Computational and Systems Neuroscience, Salt Lake City, UT*, February 2017.

Butts DA, Perrin GE, Cui Y, **Whiteway MR**, Demb J and Singer J. Characterizing nonlinear neuronal computation within a single stage of processing. *Computational and Systems Neuroscience, Salt Lake City, UT*, February 2017.

**Whiteway MR** and Butts DA. Hidden sources of variability modulate populations of sensory neurons. *Society for Neuroscience, San Diego, CA*, November 2016.

Stout J, **Whiteway M**, Ott E, Girvan M and Antonsen TM. The effect of network structure on the path to synchronization in large systems of coupled oscillators. *SIAM Conference on Applications of Dynamical Systems, Snowbird, UT*, May 2011.

TEACHING  
EXPERIENCE

**Lecturer**

Integral Calculus - Summer 2014

Introductory Statistics - Spring 2013

**Teaching Assistant**

Introductory Statistics - Spring 2015

Multivariable Calculus - Spring 2014 & Fall 2014

Linear Algebra - Fall 2013

Integral Calculus - Fall 2012

MENTORING

**Deep Generative Models for Understanding Natural Images**

Semester project with an undergraduate student that focused on understanding and implementing variational autoencoders and generative adversarial networks, including their conditional and convolutional variants. (Spring 2017)

**An Introduction to Neural Networks for Image Classification**

Semester project with an undergraduate student that focused on the foundations of neural networks and their application to the problem of image classification. (Fall 2016)

**Theory and Applications of the Generalized Linear Model for Regression**

Summer project with an undergraduate student that focused on the theoretical foundations of the generalized linear model, including linear regression, exponential families, maximum likelihood estimation, and iteratively reweighted least squares. (Summer 2015)

**Linear Programming and its Applications to Economics**

Semester project with an undergraduate student that focused on how to represent a linear optimization problem in the language of linear algebra, and the fundamentals of the Simplex Algorithm. (Spring 2015)

ACTIVITIES

Treasurer for the AMSC Student Council (Fall 2015-Spring 2017)

LANGUAGE  
SKILLS

Proficient: MATLAB, Python (Tensorflow, OpenCV), L<sup>A</sup>T<sub>E</sub>X

Inefficient: C++ (OpenGL), Java