

Eleanor Batty | Curriculum Vitae

Jerome L. Greene Science Center, 5th floor, 3227 Broadway, New York NY 10027

✉ erb2180@columbia.edu

Education

- **Columbia University** 2014–Present
Ph.D. Candidate, Neurobiology & Behavior
- **Brown University** 2010–2014
B.Sc with Honors in Neuroscience, B.A. in Physics, GPA 4.0

Research Experience

- **Ph.D. Research** 2015–Present
Advisor: Liam Paninski, Center for Theoretical Neuroscience, Columbia University
Research focuses at the intersection of deep learning and neuroscience, specific projects include using artificial neural networks for improved encoding and decoding of neural responses in the retina
- **Undergraduate Thesis Research** 2013–2014
Advisor: Elie Bienenstock, Applied Mathematics Department, Brown University
Incorporated graph-theory concepts into hierarchical models of vision to improve performance
- **Undergraduate Research** 2011–2014
Advisor: Jerome Sanes, Neuroscience Department, Brown University
Collected and analyzed fMRI data to study the effects of gaze on directional coding in human fronto-parietal cortex
- **EPFL Summer Research Program** Summer 2013
Advisor: Wulfram Gerstner, Laboratory for Computational Neuroscience, EPFL
Implemented and analyzed a novel neuron model which incorporated spike-frequency adaptation into an exponential integrate-and-fire model
- **CSHL Undergraduate Research Program** Summer 2012
Advisor: Anne Churchland, Cold Spring Harbor Laboratory
Recorded and analyzed data from electrophysiological recordings in rats to investigate the encoding of head movement in posterior parietal cortex

Teaching Experience

- **Lecturer** Fall 2016, 2017
Quantitative Approaches for Experimental Neuroscientists
Graduate-level course, lectured about GLMs and deep neural networks, designed and graded homework
- **Teaching Assistant** Spring 2017
Introduction to Theoretical Neuroscience
Graduate-level course, led homework help sessions
- **Teaching Assistant** Fall 2016
Experimental Approaches

Graduate-level course, edited and discussed grant proposals

Teaching Assistant

Fall 2015

- *Statistical Analysis of Neural Data*

Graduate-level course, gave two neuroscience review lectures

Teaching Assistant

Fall 2013

- *Introduction to Neuroscience*

Undergraduate-level course, lectured weekly

Publications

- Parthasarathy, N.*, Batty, E.*, Falcon, W., Rutten, T., Rajpal, M., Chichilnisky, E., Paninski, L. Neural Networks for Efficient Bayesian Decoding of Natural Images from Retinal Neurons. To appear in Neural Information Processing Systems 2017. Accepted as a spotlight presentation.
- Lee, J., Carlson, D., Shokri, H., Yao, W., Goetz, G., Hagen, E., Batty, E., Chichilnisky, E., Einevoll, G., Paninski, L. YASS: Yet Another Spike Sorter. To appear in Neural Information Processing Systems 2017.
- Batty, E., Merel, J., Brackbill, N., Heitman, A., Sher, A., Litke, A., Chichilnisky E., Paninski, L. (2017) Multilayer recurrent network models of primate retinal ganglion cell responses. International Conference on Learning Representations.

Conference Talks

- "Neural Networks for Efficient Bayesian Decoding of Natural Images from Retinal Neurons." Annual Conference on Cognitive Computational Neuroscience. September 2017.

Posters

- Parthasarathy, N.*, Batty, E.*, et al (2017). Nonlinear amortized Bayesian decoding of natural scenes from retinal responses. Collaborative Research in Computational Neuroscience (CRCNS) Annual PI Meeting.
- Batty, E. et al (2016). Multilayer recurrent network models of primate retinal ganglion cells. NIPS Workshop, Brains and Bits: Neuroscience meets Machine Learning.
- Brackbill, N., Heitman, A., Batty, E. et al (2016). Spatial extent of inputs to primate ganglion cells in natural viewing conditions. FASEB.

Awards, Honors, & Fellowships

- National Science Foundation Graduate Research Fellowship *2015-2018*
- James T. McIlwain Award for Excellence in Undergraduate Research *2014*
- BIO REU Travel Scholarship *2013*