Eleanor Batty | Curriculum Vitae

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Education

- **Columbia University** *2014 - 2020*
  Ph.D., Neurobiology & Behavior
- **Brown University** *2010 - 2014*
  B.Sc. with Honors in Neuroscience, B.A. in Physics, GPA 4.0

Research and Work Experience

- **Lecturer/Curriculum Developer for Computational Neuroscience** *May 2020 - Present*
  Harvard University Program in Neuroscience
- **Ph.D. Research** *2015 - 2020*
  Advisor: Liam Paninski, Center for Theoretical Neuroscience, Columbia University
  Research focuses at the intersection of machine learning and neuroscience, specific projects include developing artificial neural network based methods for improved encoding and decoding of neural responses and developing a toolbox to analyze behavioral videos and connect to neural activity
- **Facebook AI Research Internship/Contingent Worker** *June 2019 - Present*
  Advisor: Ari Morcos
  Research focuses on methodical analysis of regularization methods and their impact on network representation
- **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
- **EPFL Summer Research Program** *Summer 2013*
  Advisor: Wulfram Gerstner, Laboratory for Computational Neuroscience, EPFL
- **CSHL Undergraduate Research Program** *Summer 2012*
  Advisor: Anne Churchland, Cold Spring Harbor Laboratory

Publications

- *BehaveNet: nonlinear embedding and Bayesian neural decoding of behavioral videos*
  Batty, E*, Whiteway, M*, Saxena, S, Biderman, D, Abe, T, Musall, S, Gillis, W, Markowitz, J, Churchland, A, Cunningham, J, Datta, S, Linderman, S, Paninski, L *Authors contributed equally
  Advances in Neural Informational Processing Systems (NeurIPS) 2019
- *Neural Networks for Efficient Bayesian Decoding of Natural Images from Retinal Neurons*
  Parthasarathy, N*, **Batty, E***, Falcon, W, Rutten, T, Rajpal, M, Chichilnisky, E, Paninski, L *Authors contributed equally
  Advances in Neural Information Processing Systems (NeurIPS) 2017
- *YASS: Yet Another Spike Sorter*
  Lee, J, Carlson, D, Shokri, H, Yao, W, Goetz, G, Hagen, E, **Batty, E**, Chichilnisky, E, Einevoll, G, Paninski, L
  Advances in Neural Information Processing Systems (NeurIPS) 2017
- *Multilayer recurrent network models of primate retinal ganglion cell responses*
  Batty, E, Merel, J, Brackbill, N, Heitman, A, Sher, A, Litke, A, Chichilnisky E, Paninski, L
  International Conference on Learning Representations (ICLR) 2017

Conference Talks

- "Encoding and Decoding Retinal Responses Using Artificial Neural Networks." Gatsby Tri-Center Meeting. 2018.
- "Neural Networks for Efficient Bayesian Decoding of Natural Images from Retinal Neurons." Annual Conference on Cognitive Computational Neuroscience. 2017.

Abstracts

- **Batty, E***, Whiteway, M*, et al (2019). BehaveNet: nonlinear embedding and Bayesian neural decoding of behavioral videos. Society for Neuroscience.
- 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

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

Peer Review

- Neural Information Processing Systems (NeurIPS) *2019*
- Computational and Systems Neuroscience (Cosyne) *2019*

Teaching Experience

- **Lecturer, Columbia University** *Fall 2016, 2017*
  Quantitative Approaches for Experimental Neuroscientists
- **Teaching Assistant, Columbia University** *Spring 2017, 2019*
  Introduction to Theoretical Neuroscience
- **Teaching Assistant, Columbia University** *Fall 2016*
  Experimental Approaches
- **Teaching Assistant, Columbia University** *Fall 2015*
  Statistical Analysis of Neural Data

Skills

Advanced: Python, PyTorch, Matlab, Deep Learning, Probabilistic Graphical Modeling, Computational Neuroscience
Intermediate: TensorFlow