Brendan Chambers

Ph.D., Computational Neuroscience

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Computer Programming and Development

Languages Python, MATLAB, JavaScript/HTML/CSS, Java/C#, Scheme, Processing, D3
Tools Beautiful Soup, Selenium Webdriver, Jupyter Notebook, Github, Windows, Linux

Selected Publications

Multineuronal activity patterns identify selective synaptic connections under realistic constraints
Journal of Neurophysiology (2015)
Identifying biases in inference. Mapping dynamics unfolding on networks.

Higher-order synaptic interactions coordinate dynamics in recurrent networks
PLoS Computational Biology (2016)
Dynamic motif analysis. Emergent network dynamics.
Nominated by Society for Neuroscience for Hot Topics of 2015.
PLoS Computational Biology Top 50 Most Downloaded Articles of 2016/2017

Ensemble stacking mitigates biases in inference of synaptic connectivity
Network Neuroscience (2017)
Comparison and combination of diverse methods for mapping lagged timing relationships.

Recent Research History

Postdoctoral Gap Year 2018
Projects in web scraping, interactive visualization, and Twitter mapping.
Other activities: Multi-pitch rock climbing. Bach Two- and Three-Part Inventions.

University of Chicago Laura Thorne Donnelley Fellow 2016 - 2017
Bridge postdoctoral fellowship, MacLean Laboratory & Palmer Theory Group.

Ph.D. Candidate, Computational Neuroscience, MacLean Laboratory, University of Chicago 2011 - 2016
Analyzed 2GB data streams from raw data to hypothesis testing and visualization.
Developed framework to map activity in the neural microcircuitry of neocortex.
Took on extensive editing and writing responsibilities for the laboratory.

Honors Research, Department of Computer Science, Oberlin College 2010 - 2011
Parsed distorted words with deep neural networks & visual attention.

Data Skills

Data management
JSON, XML, CSV, large binary files. Mongo DB. Measurement & signal processing. Data wrangling.

Machine learning
Deep networks, RNNs, reward learning. Spiking neurons. Swarm optimization, evolutionary algorithms.

Analysis
Clustering, classification, regression. Dynamics of multilayer networks. Inference of causal relationships.
Hypothesis testing, statistical nulls, multi-comparison testing. Natural language processing.

Visualization
Python Matplotlib, Adobe Illustrator, Inkscape, Gephi, CSS, D3. Accessible design.

Awards

NetSci 2017 Symposium Speaker, Society for Network Science 2017
NSF IGERT Fellow. Integrative Training in the Neural Control of Movement 2012 - 2015
NSF S-STEM Scholar in Computation and Modeling 2009 - 2011
John Fredrick Oberlin Scholar 2007 - 2011
National Merit Scholar 2007 - 2009