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W. Jeffrey Johnston
Postdoctoral researcher in the Center for Theoretical Neuroscience at Columbia University
Pronouns: he/they

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Research positions

2020 - present	Postdoctoral researcher, Center for Theoretical Neuroscience, Columbia University
2015 - 2020	Graduate student, Freedman Lab, The University of Chicago
2014	Summer intern, Allen Institute for Brain Science
2010 - 2014	Research assistant, Saxe Lab, Massachusetts Institute of Technology
2013 - 2014	Research assistant, Interdisciplinary Affective Science Lab, Northeastern University
2011, 2013	Research assistant, Redwood Center for Theoretical Neuroscience, UC Berkeley
2012 - 2013	Research assistant, Relational Agents Group, Northeastern University

Education

2014 - 2020	PhD in Computational Neuroscience, The University of Chicago Committee: David J. Freedman (adviser), Stephanie E. Palmer (chair), John H.R. Maunsell, and Edward Awh
2010 - 2014	BS in Computer Science and Cognitive Psychology with a minor in Mathematics, Northeastern University

Awards, honors, and fellowships

2021	Best dissertation award, Computational Neuroscience Program at The University Chicago
2018 - 2020	NIH Kirschstein National Research Service Award Individual Predoctoral Fellowship
2019	Brien O'Brien and Mary Hasten Scholarship to attend Methods in Computational Neuroscience at the Marine Biological Laboratory
2016	BSD Recruitment Travel Award, The University of Chicago
2016	Gordon Research Seminar Neurobiology of Cognition Travel Award
2015 - 2016	Pritzker Fellowship, The University of Chicago
2014	University Honors, Northeastern University
2014	Class Marshall, Northeastern University
2014	Summa Cum Laude, Northeastern University
2010 - 2014	Dean's List, Northeastern University
2010 - 2014	Dean's Scholarship, Northeastern University
2012	Undergraduate Life and Physical Sciences award, RISE 2012, Northeastern University

Advanced coursework

2019	Methods in Computational Neuroscience, Marine Biological Laboratory
2018	Janelia Junior Scientist Workshop on Theoretical Neuroscience

Teaching and service experience

2018 - 2020	Co-organizer, Computational Neuroscience Journal Club
2018	Co-organizer, Undergraduate Systems Neuroscience Journal Club
2018	Teaching assistant, Quantitative Biology Bootcamp 4, Marine Biological Laboratory

2017	Member, UChicago Neuroscience Retreat Planning Committee
2016, 2017	Teaching assistant, Brains! Outreach Program
2016	Teaching assistant, Theoretical Neuroscience III: Statistics and Information Theory, Prof. Stephanie E. Palmer
2016	Co-organizer, Python for Neuroscientists Workshop
2015	Teaching assistant, Theoretical Neuroscience I: Single Neuron Dynamics and Computation, Prof. Nicolas Brunel
2012	Tutor and grader, Fundamentals of Computer Science I
2012	Tutor, Bootstrap Program, Orchard Gardens K-8 School, Boston, MA

Publications

Johnston WJ, Freedman DJ (in preparation) Solutions to the assignment problem balance tradeoffs between local and catastrophic errors.

Johnston WJ, Tetrick SM, Freedman DJ (submitted) The lateral intraparietal area is preferentially engaged in directed tasks rather than undirected free behavior.

Johnston WJ, Fusi S (2021) Abstraction emerges naturally in networks trained to perform multiple tasks. bioRxiv, https://doi.org/10.1101/2021.10.20.465187

Johnston WJ, Palmer SE, Freedman DJ (2020) Nonlinear mixed selectivity produces noise-tolerant neural representations. PLOS Computational Biology, https://doi.org/10.1371/journal.pcbi.1007544.

Open Science Collaboration (2015) Estimating the reproducibility of psychological science. Science, https://doi.org/10.1126/science.aac4716

Open Science Collaboration (2012) An open, large-scale, collaborative effort to estimate the reproducibility of psychological science. Perspectives on Psychological Science, https://doi.org/10.1177/1745691612462588

Conference, workshop, and seminar talks

Reliable and distributed computation in the brain. The University of Chicago, August 26, 2020

The lateral intraparietal area is preferentially engaged in directed tasks rather than undirected free behavior. Computational and Theoretical Neuroscience Seminar Series, Duke University, August 20, 2020

Noise robust and metabolically efficient neural representations within and across brain regions. Computation & Theory Group, Janelia Research Campus, March 19, 2020

Noise robust and metabolically efficient neural representations within and across brain regions. Center for Theoretical Neuroscience, Columbia University, February 13, 2020

Nonlinear mixed selectivity supports reliable neural computation. UChicago Recruitment Weekend, February 9, 2020

This or that: How the brain makes sense of multiple representations of the same thing. UChicago Neuroscience Student Talk series, April 15, 2019

Channel coding for neuroscientists. Janelia Junior Scientist Workshop for Theoretical Neuroscience, October 21-26, 2018

Nonlinear mixed selectivity produces noise-tolerant neural representations. Janelia Junior Scientist Workshop for Theoretical Neuroscience, October 21-26, 2018

Nonlinear mixed selectivity produces noise-tolerant neural representations. Gordon Research Seminar, Neurobiology of Cognition, July 21-22, 2018

Nonlinear mixed selectivity produces noise-tolerant neural representations. UChicago Neuroscience Student Talk series, April 9, 2018

Looking where we want to look: Relating neuronal and behavioral correlates of image familiarity. UChicago Neuroscience Student Talk series, April 17, 2017

Looking where we want to look: Relating neuronal and behavioral correlates of image familiarity. Gordon Research Seminar, Neurobiology of Cognition, July 23-24, 2016

Other conference presentations

Johnston WJ, Freedman DJ. Solutions to the assignment problem balance tradeoffs between local and catastrophic errors. Poster presented at: COSYNE, February 27-March 1, 2020

Johnston WJ, Freedman DJ. Two tradeoffs between local accuracy and catastrophic errors in a solution to the representation assignment problem. Poster presented at: Society for Neuroscience, October 19-23, 2019s

Peysakhovich B, Zhu O, Ibos G, Johnston WJ, Freedman DJ. Dissociating cognitive and sensory representations in posterior parietal cortex. Poster presented at: Society for Neuroscience, October 19-23, 2019

Johnston WJ, Mohan K, Freedman DJ. What goes where: Using stimulus representations from both visual streams to guide behavior. Poster presented at: Society for Neuroscience, November 3-7, 2018

Johnston WJ, Palmer SE, Freedman DJ. Nonlinear mixed selectivity produces noise-tolerant neural representations. Poster presented at*:* Gordon Research Conference, Neurobiology of Cognition, July 22-27, 2018

Johnston WJ, Palmer SE, Freedman DJ. Nonlinear mixed selectivity produces noise-tolerant neural representations. Poster presented at: COSYNE, March 1-4, 2018

Johnston WJ, Mohan K, Freedman DJ. Looking where we want to look: Relating neuronal and behavioral correlates of image familiarity. Poster presented at: Society for Neuroscience, November 12-16, 2016

Johnston WJ, Mohan K, Freedman DJ. Looking where we want to look: Relating neuronal and behavioral correlates of image familiarity. Poster presented at: Gordon Research Conference, Neurobiology of Cognition, July 24-29, 2016

Johnston WJ, Denman D, Gaudreault NG, Long B, Peng H, Blanche TJ. The path of least resistance: minimizing vascular damage from electrode array insertions. Poster presented at: Society for Neuroscience, October 17-21, 2015

Mohan K, Johnston WJ, Freedman DJ. Impact of visual familiarity on neuronal representations in inferotemporal cortex and behavior. Poster presented at: Society for Neuroscience, October 17-21, 2015

Johnston WJ, Bruneau E, Saxe R. Mind the gap: bridging the gap in intergroup empathy in arbitrary and real groups. Poster presented at: Northeastern University Research, Innovation, and Scholarship Expo, March 22, 2013

Johnston WJ, Koster-Hale J, Yazzolina L, Saxe R, Bedny M. To peek and to peer: “visual” verb meanings are largely unaffected by congenital blindness. Poster presented at: Northeastern University Research, Innovation, and Scholarship Expo, March 29, 2012