Lane McIntosh

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RESEARCH VISION Deep learning in the real world; developing human-level perception of dynamic, noisy real-world datasets with moving objects and changing statistics.

EDUCATION

Ph.D., Neurosciences	Stanford University	2012-present
Ph.D. Minor, Computer Science	Stanford University	2012-present
M.A., Mathematics	University of Hawaii	2010-2012
B.A., Biological Sciences, Computational Neuroscience	University of Chicago	2006-2010

RESEARCH

Google Brain, *Software Engineer Intern*   June - November 2017
Developed novel recurrent neural networks for efficiently classifying objects in videos.
- McIntosh L, Sussillo D, Maheswaranathan N, and Shlens J. *Recurrent segmentation for variable computational budgets.* **CVPR** *(Submitted, 2017).*

Stanford University, *PhD Candidate*   2012 - present
Theory and deep learning modeling to understand the first stages of biological vision.
- Manu M*, McIntosh L*, Kastner D, Naecker B, Baccus S. *Synchronous inhibitory pathways create both efficiency and diversity in the retina.* **Nature Neuroscience** *(Under review, 2017).*
- McIntosh L*, Maheswaranathan N*, Nayebi A, Ganguli S, Baccus S. *Deep Learning Models of the Retinal Response to Natural Scenes.* **NIPS** 2016, pp. 1369-1377.
- McIntosh L*, Maheswaranathan N*, Nayebi A, Ganguli S, Baccus S. *Deep Learning Models of the Retinal Response to Natural Scenes.* COSYNE **invited talk**, 2016.
- McIntosh L. *Understanding uncertainty in neural systems.* Workshop on Machine Learning and Computer Vision at Janelia Research Campus, 2016.
- McIntosh L. *Convolutional neural network models of the first stages of biological vision.* IEEE Signal Processing Society invited talk, 2016.
- McIntosh L*, Maheswaranathan N*, Nayebi A, Ganguli S, Baccus S. *Deep Learning Models of the Retinal Response to Natural Scenes.* **NVIDIA Best Poster Award**, Stanford Center for Image Systems Engineering Industry Affiliates Conference, 2016.

UH Machine Learning Group, *MA Candidate*   2010-2012
Characterized efficiency in neural networks using information theory and statistical mechanics.
- McIntosh L, Still S. *Thermodynamics of Prediction in Neural Networks.* MA Thesis, 2012.

University of Chicago, *Undergraduate Researcher*   2010
Designed software to classify neurons in real-time experiments.

Institute for Advanced Study, Princeton, NJ, *Undergraduate Researcher*   2009
Developed data-mining software for quantifying variability and aberrations in large genomic datasets.

SELECTED HONORS

Ruth L. Kirschstein National Research Service Award	NIH	2016-present
NSF Mind, Brain, and Computation Graduate Fellowship	Stanford University	2013-2016
NSF SUPER-M Graduate Fellowship	University of Hawaii	2011-2012
Graduate Teaching Fellowship	University of Hawaii	2010-2011
Innovative Funding Strategy Award	University of Chicago	2009
Lerman-Neubauer Junior Teaching Fellowship	University of Chicago	2008
NIH Neuroscience and Neuroengineering Fellowship	University of Chicago	2008

SELECTED TEACHING

CS231n Convolutional Neural Networks	TA	Stanford University	2016, 2017
Math Tools for Neuroscientists	Lecturer	Stanford University	2015, 2016, 2017
Introduction to Perception	TA	Stanford University	2014, 2015, 2016
Precalculus	Lecturer	University of Hawaii	2012
Biophysics and Chemical Biology	TA	University of Chicago	2008