Lane McIntosh

CONTACT
INFORMATION

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RESEARCH VISION

Deep learning in the wild: perception from real-world datasets with noise, moving objects, and changing statistics.

EDUCATION

Ph.D., Neurosciences	Stanford University	2012-2018
Ph.D. Minor, Computer Science	Stanford University	2012-2018
M.A., Mathematics	University of Hawaii	2010-2012
B.A., 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. (In preparation, 2018).* **Patent Pending**. Arxiv 1711.10151.

Stanford University, *PhD Candidate*   2012 - 2018

Theory and deep learning modeling to understand the first stages of biological vision.
  − McIntosh L, Wood S, Maheswaranathan N, Baccus S, Ganguli, S. *Dynamical system recurrent neural networks. (In preparation, 2018).*
  − 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.* **Lecturer** at 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	2016-2018
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
  − Taught > 600 students, wrote midterm exam, and mentored dozens of deep learning projects.
Math Tools for Neuroscientists   Lecturer   Stanford University   2015-2017
  − Initiated, taught, and designed curriculum for PhD students in linear algebra, modeling, etc.
Introduction to Perception   TA   Stanford University   2014-2016
  − Taught sections on quantitative analysis of vision and perception for > 150 undergraduates.