Katelyn L. Arnemann

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https://klarnemann.github.io/

Education

UC Berkeley
Ph.D.
Neuroscience
May 2018
NSF Graduate Research Fellow

Case Western
Reserve University
B.A.
Philosophy & Cognitive Science
May 2010
Truman P. Handy Philosophical Prize; Cognitive Science Award

Skills

Programming
Python (numpy, pandas, scipy, networkx, matplotlib, sklearn, jupyter, nibabel, nipype, rpy2); R (psych); matlab; github; SQL; html

Math & Statistics
descriptive, parametric, and, non-parametric statistics; bootstrap and permutation testing; ANOVA; probability theory; discrete mathematics; logic; graph theory

Machine Learning
PCA; ICA; factor analysis; supervised learning (e.g. perceptron classifier); k-means clustering; community detection (e.g. spectral clustering); minimum spanning tree

Communication
writing; editing; presentation

Experience

Rutgers University, Newark, NJ
Center for Molecular and Behavioral Neuroscience
Postdoctoral Researcher — July 2018 to Present

- Used R and python to implement exploratory factor analysis to estimate latent functional connectivity across brain states
- Computed dynamic functional brain networks using a sliding window approach and identified data-driven brain states using k-means clustering

University of California, Berkeley, CA
Helen Wills Neuroscience Institute
Graduate Student Researcher — August 2012 to May 2018

- Wrangled data from longitudinal, multimodal neuroimaging scans in Python
- Developed open-source code in Python to flexibly preprocess rs-fMRI data
- Defined a metric "metabolic inefficiency" (residual of a liner regression model in sklearn) that predicted the topology of Aβ pathology
- Characterized group differences in metabolic brain networks
- Modeled spread of Aβ pathology with directed progression networks

US Department of Veterans Affairs, Martinez, CA
Department of Neurology
Research Assistant — October 2010 to August 2012

- Computed modularity using community detection in functional brain networks to predict improvement in cognition after training for brain-injured patients
- Classified fMRI task information using a multilayer perceptron classifier
- My team developed open-source code in Python for community detection https://github.com/nipy/brainx

Projects & Leadership

GDSO Data Science Workshop, UC Berkeley
Participant — July 2017

- My team used semantic analysis to build a Wikipedia content-recommender
- Validated results using network analysis of internal hyperlinks

Neuroscience Data Mining Group, UC Berkeley
Founder — October 2014 to December 2016
https://sites.google.com/site/neurodatamininggroup/

- Disseminated machine learning and statistical techniques in neuroscience
- Coordinated logistics, created website, and led and presented at meetings

Berkeley Science Review
Author & Editor — August 2013 to December 2015

- Wrote and edited original content for award-winning magazine