

Katelyn L. Arnemann

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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,
nipy, rpy2); R (psych);
matlab; github; MySQL

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 linear regression model in sklearn) that predicted the topology of A β pathology
- Characterized group differences in metabolic brain networks
- Modeled spread of A β pathology with directed progression networks

US Department of Veterans Affairs, Martinez, CA
Department of Neurology
Research Assistant October 2010 to May 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

CDIPS 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