

# Katelyn L. Arnemann

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<https://klarnemann.github.io/>

## EDUCATION

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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

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### 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  
(community detection,  
minimum spanning tree)

### Machine Learning

PCA; ICA; factor analysis;  
supervised learning (e.g.  
perceptron classifier); k-  
means clustering; regression

### Communication

writing; editing; presentation

## EXPERIENCE

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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 $\beta$  pathology
- Characterized group differences in metabolic brain networks
- Modeled spread of A $\beta$  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 MySQL and perceptron classifier
- Worked on team that developed open-source code for community detection <https://github.com/nipy/brainx>

## PROJECTS & LEADERSHIP

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CDIPS Data Science Workshop, UC Berkeley  
Participant July 2017

- Team built a Wikipedia article content-recommender using semantic analysis
- 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, led and presented at meetings, created website, etc

Berkeley Science Review  
Author & Editor August 2013 to December 2015

- Wrote and edited original content for award-winning magazine