Emily Olafson

computational neuroscientist

Ithaca, NY
(646)-881-1060
olafsonemily*gmail.com

emilyolafson.github.io

Neuroscience PhD candidate adept at analysing and interpreting large datasets, developing predictive models, and applying novel analytical frameworks. Extensive data processing and analysis experience and strong ability to communicate complex ideas and results to a general audience.

Education

B. Sc. Neuroscience
McGill University, Canada
GPA 3.94/4
2015 - 2019

PhD Neuroscience
Weill Cornell Medical College, NY, USA
2019 - present

Skills

R, MATLAB
Python, PyTorch, Sci-kit learn, pandas, numpy, matplotlib, TensorFlow
AWS
Machine learning
Command line
Probability & statistics
GitHub

Extras

Prison Instructor
September 2021 - present
Neuroscience course instructor at Five Points Correctional Facility in Romulus, NY

Machine Learning in Medicine co-organizer
May 2021 - present
Invited speakers to virtual seminar series and ran Twitter, website, and email communications

BrainHack co-organizer
December 2020
Co-organized NYC edition of BrainHack, a data science and neuroscience hackathon

Projects + Publications

Development of a novel imaging biomarker to study brain anatomy

- Conceptualized and implemented a pipeline to extract a novel biomarker from a large, multi-site imaging dataset.
- Used R, MATLAB, and bash on distributed computing platform to extract image intensity.
- Developed algorithms to detect anomalies in signal intensity in processed images.
- Extracted image intensity, performed model fitting, and statistically assessed model parameters related to age, sex, and autism diagnosis.
- Results summarized and published in Cerebral Cortex.

Graph theory analysis of network reorganization after stroke

- Preprocessed raw time series data to generate graph representations of brain activity.
- Applied graph theory algorithms to isolate instances of reorganization.
- Used modelling techniques to relate reorganization and clinical parameters to stroke recovery, published in Neuroimage.

Predicting disability using 3D imaging data

- Predictive modelling of motor disability in large multiple sclerosis imaging dataset using a 3-dimensional convolutional neural network in Keras and TensorFlow.
- Learned representations of brain atrophy predictive of disability and achieved predictive accuracy on par with current methods.

Clustering timeseries data to identify discrete brain states

- Performed k-means clustering of processed time series data to characterize time-varying brain activity into discrete states.
- Programmed calculation of dynamic systems parameters, including optimization procedures to determine model parameterization.
- Applied regression models to identify links between state dynamics and recovery from stroke.

Awards and Certifications

Abstract award 06/2021	Top 3% of abstracts at the Organization for Human Brain Mapping conference.
Best Diagnostic Application 02/2020	Artificial Intelligence Health Hackathon for OpenCellAI, blood cancer detection software
Graduate Fellowship Award 05/2019	Master's scholarship awarded by the Canadian Institutes of Health Research
Scientific and High Performance Computing 06/2018	Summer course run by SciNet including parallel Python, R, and Machine Learning with Python