

Atlas Kazemian

COGNITIVE SCIENCE RESEARCHER

Research Experience

2022 - Now

Department of Cognitive Science, Johns Hopkins University
Baltimore, MD

MA Researcher, advised by Michael Bonner.
Reverse engineering the computations and algorithms of human visual cortex using deep neural networks.

2021 - 2022

Department of Ophthalmology and Visual Sciences, University of British Columbia, Vancouver, BC
Research Assistant, advised by Jason Barton and Ipek Oruc.
Using deep learning to study the face scanning patterns of patients with Prosopagnosia (face agnosia).

Education

2022 - 2023

Johns Hopkins University
MA Cognitive Science

Thesis: "Toward a computational neuroscience of visual cortex without deep learning"

2021

Lighthouse Labs
Diploma Data Science

2015 - 2020





University of British Columbia
BAS Integrated Engineering

Conference Presentations and Posters

2023

Keynote Tutorial Presentation 






"A high dimensional view of computational neuroscience",
Gauthaman R. M., Kazemian A., Chen Z., Guth F., Bonner M.
Conference on Cognitive Computational Neuroscience

2023	Poster  "High-dimensional sampling in random neural networks competes with deep learning models of visual cortex", Kazemian A., Elmoznino E., Bonner M. <i>Conference on Cognitive Computational Neuroscience</i>
2023	Talk Presentation  "Toward a computational neuroscience of visual cortex without deep learning", Kazemian A., Elmoznino E., Bonner M. <i>Vision Sciences Society Conference</i>
2022	Poster  "Towards high-performance encoding models of visual cortex using modules of canonical computations", Kazemian A., Elmoznino E., Bonner M. <i>Conference on Cognitive Computational Neuroscience</i>
2022	Poster  "Scanning faces: A deep learning approach to studying the eye movements of subjects with Prosopagnosia", Kazemian A., Oruc I., Barton J. <i>North American Neuro-Ophthalmology Society Annual Meeting</i>

Work Experience

2021	AdHawk Microsystems. Toronto, ON Data Science Intern <ul style="list-style-type: none"> Designed an end-to-end pipeline for predicting mental fatigue based on reading behavior. <ul style="list-style-type: none"> Led the experimental design, data collection and processing, supervised model training and results presentation. Developed the first case study for the AdHawk eye-tracking glasses, contributing to fund-raising and marketing efforts.
2021	Neobi, Calgary, AB Data Science Intern <ul style="list-style-type: none"> Extracted online product information from various e-commerce sites to gain insights into the Canadian cannabis market. Enhanced web scraping and data processing pipelines, reducing data anomalies. Conducted topic modeling and sentiment analysis on online customer reviews, revealing key market trends for clients.
2019	Entuitive, Calgary, AB R&D Intern <ul style="list-style-type: none"> Automated the pricing workflow for parking renovations by developing models to forecast parking renovation expenses based on previous data. Resulting in price estimation accuracy.

Projects

2022-Now	Modeling visual cortex with high dimensional, learning free convolutional neural networks  A family of Convolutional Neural Networks (CNNs) that explain image-evoked neural responses in the primate brain without pre-training on a computer vision task.
2021-2022	A deep learning approach for studying face scanning in prosopagnosia  An ensemble of CNNs to distinguish subjects with prosopagnosia from healthy controls using their gaze pattern during a face recognition task.
2022	A proposed neuro-imaging experiment for studying compositionality in visual perception  An fMRI experiment proposal for exploring the compositionality of neural representations during visual perception of object relations.
2021	Predicting grasp and lift motions using EEG  A PyTorch project for predicting intended motor movement using EEG data collected from subjects while performing a series of grasp and lift motions.
2021	Mental state decoder  A TensorFlow project for predicting mental state using data collected from a consumer grade EEG headband.

Technical Skills

Programming	Python, SQL, C++
Computational Neuroscience	fMRI data analysis, dimensionality reduction techniques, cross-validated regression methods for comparing brain and model representations, eye-tracking data analysis
Deep Learning	PyTorch, TensorFlow
Machine Learning	Scikit-learn, Scipy
Data Manipulation and Analysis	Torch, Xarray, NumPy, Pandas
Visualization	Matplotlib, Seaborn, Plotly
Software Tools	Git, Jupyter Notebook

Languages

Farsi	Native language
English	Advanced Listener, Advanced Speaker, Advanced Reading and Writing