Atlas Kazemian

Cognitive Science Reseacher

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Resume PDF

CAREER PROFILE

I am a cognitive science researcher working at the intersection of biological and artificial intelligence. My background entails a combination of academic research and industry internships, through which I have acquired expertise in tackling scientific questions using a technical mindset. I am passionate about closing the gap between the performance of humans and deep neural network across a wide range of tasks. My goal is to apply my skills towards developing AI that can process information with the same robustness and generalization power as humans, and can ultimately compelement our abilities across a multitude of industries and applications.

RESEARCH EXPERIENCE

Graduate Researcher 2022 - Now
Department of Cognitive Science, Johns Hopkins University

Studying the nature of representations in human visual cortex through computational modeling, advised by Prof Michael Bonner.

Post-baccalaureate Researcher 2021 - 2022
Department of Ophthalmology and Visual Sciences, The University of British Columbia

Studied abnormal behavioral markers involved in face scanning in prosopagnosia (face agnosia) using deep learning, advised by Prof. Jason Barton and Prof. Ipek Oruc.

CONFERENCE TALKS AND POSTERS

- (Talk) Toward a computational neuroscience of visual cortex without deep learning
Kazemian A.,Elmoznino E., Bonner M.
Vision Sciences Society, 2023

- (Poster) Towards high-performance encoding models of visual cortex using modules of canonical computations
Kazemian A.,Elmoznino E., Bonner M.s
Cognitive Computational Neuroscience, 2022

- (Featured Poster) Scanning faces: using deep learning to analyze the eye movements of prosopagnosic subjects
Kazemian A., Barton J., Oruc I.
North American Neuro Ophthalmology Society, 2022

PROJECTS

Modeling visual cortex using wide untrained neural networks (2022-Now) - Developing learning-free models that compete with standard trained Convolutional Neural Networks at predicting image-evoked neural responses in the primate brain.

A deep learning approach for studying face scanning in prosopagnosia (2021-2022) - Developed an ensemble of CNNs to distinguish subjects with prosopagnosia from healthy controls using their gaze pattern during a face recognition task. The results were used post hoc to study prosopagnosic behavioral markers during face scanning.

A proposed neuro-imaging experiment for studying compositionality in visual perception (2022) - Designed an fMRI experiment proposal for exploring the compositionality of neural representations during visual perception of object relations.

Bionic AI (2021) - Designed a (PyTorch) model for predicting intended motor movement using EEG data collected from subjects while performing a series of grasp and lift motions.

Mental state decoder (2021) - Designed a (TensorFlow) model for predicting mental state (relaxed, focused, neutral) using data collected from a consumer grade EEG headband.

WORK EXPERIENCE

Data Science Intern 2021
AdHawk Microsystems, Toronto

Modeled people's reading behavior as a function of cognitive load and text difficulty using eye-tracking.
- Designed the experiment, collected and processed eyetracking data, trained supervised models to classify trials, and presented the results through a user-friendly dashboard. The project demonstrated a potential usecase for the AdHawk eyetracking glasses and attracted iterest from potential customers

Data Science Intern 2021
Neobi, Vancouver

Utilized online product information from a multitude of e-commerce websites to draw insights about the canadian cannabis market.
- Improved pipelines for web scraping and data processing, resulting in less anomalies
- Performed topic modeling and sentiment analysis of online customer reviews and presentied them through a data visualization dashboard, revealing insightful information about market trends.

R&D Intern 2019
Entuitive, Calgary

Automated the price estimation workflow for parking rennovations.
- Trained neural networks to predict parking renovation cost based on a building's conditions, resulting in more accurate price estimates and eliminating manual inspection costs

EDUCATION

MA - Cognitive Science
Johns Hopkins University
2022 - 2023

Diploma - Data Science
Lighthouse Labs
2020 - 2021

BAS - Integrated Engineering
University of British Columbia
2015 - 2020

SKILLS

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

INTERESTS

Knowledge representation and generalization in humans and machines

Biologically inspired computer vision models

Multi-modal processing in humans (vision and language) and machines (image captioning, text to image generation, visual question answering, etc)