

RESEARCH EXPERIENCE

Graduate Researcher

Department of Cognitive Science, Johns Hopkins University

2022 - Now

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

Post-Baccalaureate Researcher

Department of Ophthalmology and Visual Sciences, The University of British Columbia

2021 - 2022

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

WORK EXPERIENCE

Data Science Intern

AdHawk Microsystems, Toronto

2021

Modeled people's reading behavior as a function of cognitive load and text difficulty using eye-tracking. The project involved experimental design, data collection and processing, supervised classification of trials, and presentation of results through a user-friendly interface.

Data Science Intern

Neobi, Vancouver

2021

Utilized online product information from a multitude of e-commerce websites to draw insights about the canadian cannabis market. Designed pipelines for web scraping, data processing, data visualization, and sentiment analysis.

R&D Intern

Entuitive, Calgary

2019

Automated project cost estimation by training neural networks to predict parking renovation cost based on a building's conditions.

PROJECTS

Modeling visual cortex using wide untrained neural networks - 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 - 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 - Designed an fMRI experiment proposal for exploring the compositionality of neural representations during visual perception of object relations.

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

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

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EDUCATION

MA - Cognitive Science

Johns Hopkins University
2022 - 2023

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)