RESEARCH EXPERIENCE

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

Studying the nature of representations in human visual cortex through computational modelings, 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.

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. 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   2021
Neobi, Vancouver

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   2019
Entuitive, Calgary

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

PROJECTS

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

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.

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. The results were used post hoc to study prosopagnosic behavioral markers during face scanning.

Bionic AI - 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 - 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) Do we need deep learning? 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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📄 Resume PDF

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)