

Mojan Izadkhah

The University of British Columbia

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🔓 gitlab

Education

The University of British Columbia

Master of Applied Science (M.A.Sc.) in Neuroscience

Vancouver, Canada

Sept.2022 - Present

Sharif University of Technology

Bachelor of Science (B.Sc.) in Electrical Engineering, GPA: 3.73/4

Tehran, Iran

Sept.2017 - July.2021

Skills

Programming Languages: Python, MATLAB

Frameworks and Libraries: PyTorch

Tools: Computer Vision, Deep Learning, Machine Learning, EEG Signal Processing, fMRI Signal Processing

Research Experience

Classification of Saccades and Antisaccades from EEG signal

Machine Learning, Deep Learning, Neuroscience of Vision & Action Laboratory at UBC

Fall.2023

Preprocessed and analyzed EEG signals from 20 participants. Implemented various models (CNNs, GNNs, transformers) to identify brain regions responsible for antisaccade.

Detection of Diseases from Retinal Images using Computer Vision

Computer Vision, Deep Learning, Neuroscience of Vision & Action Laboratory at UBC

Fall.2022

Developed a multistep CNN for classifying conditions such as diabetic retinopathy, glaucoma, and hypertension from fundus retinal photos. Modified Guided Grad-CAM for model result visualization.

Functional organization of face responsive regions in lateral prefrontal cortex

Neuroimaging, fMRI signal processing, Supervised by Reza Rajimehr at the University of Cambridge

Summer.2021

Analyzed fMRI data to investigate face-selective areas using the Human Connectome Project dataset. Utilized machine learning and statistical methods for data classification and analysis. (I won the OHBM 2022 travel award)

Functional architecture of cerebral cortex during naturalistic movie-watching

Neuroimaging, fMRI signal processing, Supervised by Reza Rajimehr at the University of Cambridge

Summer.2021

I assisted with the data analysis for this paper.

Analysis of rhesus macaque's social behavior in the wild

Behavioral Neuroscience, Network Analysis, Supervised by Hamid R. Noori at MIT

Fall.2021

I investigated the social behavior of 76 monkeys using network theory measures from 8 years of camera recordings.

Investigating value memory using visual stimuli in virtual reality environment

Cognitive Neuroscience, Sharif Neuroscience Laboratory

Spring.2021

We recorded subjects' EEG signals and their performance while playing in a virtual reality environment (implemented for this purpose), to investigate value association in humans.

Classifying depression patients and normal subjects using EEG signals

EEG signal processing, Atieh Neuroscience Clinical Center

Summer.2020

I Extracted features from EEG signals taken from clinical patients and classified them with neural networks.

Evaluation of auditory attention using EEG signals when performing motor and visual tasks

EEG signal processing, Sharif University Human & Machine Interfaces Laboratory

Summer.2019

In order to model the human auditory system and evaluate auditory attention while doing visual or motor tasks (using EEG, eye-tracker, and the glove), we defined different tasks so that we could measure the subject's attention and the brain's response to unexpected events and also find brain source localization.

Awards and Honors

Faculty of Medicine Graduate Award

Fall.2022

Konkur

Ranked top 0.3%

National Mathematics and Physics University Entrance Exam with 148,429 candidates

Summer.2017

IMO

Bronze Medal

Iranian Mathematics Olympiad, Ranked top 1%

Summer.2016

IGO

Silver Medal

Iranian Geometry Olympiad, Ranked 5th among 851 students from 30 countries

Summer.2016

IGO

Gold Medal

Iranian Geometry Olympiad, Ranked 1st among 50 students

Summer.2014

Course Projects

Registration of Spinal Cord MRI

Image Registration, Medical Image Analysis & Processing, final project

Spring.2021

Using the CPD algorithm, I explored different solutions in order to improve performance of the algorithm on real world data and decrease interpenetration of spine's mid-registration.

Forecasting stock market prices

Machine Learning (Python), Introduction to Machine Learning, final project

Fall.2020

Using statistical parameters and special python libraries such as fasti, ARIMA, and prophet, I implemented machine learning algorithms to forecast the future values of the given data.

Teaching Experience

University of British Columbia, Department of Psychology and Neuroscience:

- Teaching assistant in Foundations of Computational Neuroscience, Winter.2023
- Teaching assistant in Behavioral and Neuroscientific Research Methods, Fall.2022 & Fall.2023

Sharif University of Technology, Department of Electrical Engineering:

- Teaching assistant in EEG Signal Processing, Fall.2021
- Teaching assistant in Foundations of Biomedical Engineering, Fall.2021
- Teaching assistant in AI & Biological Computations, Fall.2021
- Teaching assistant in Machine Learning, Spring.2021
- Teaching assistant in Engineering Statistics & Probabilities, Fall.2021 & Spring.2021
- Teaching assistant in Data Structure & Algorithm, Spring.2021
- Teaching assistant in Computer architecture & Laboratory, Spring.2021 & Fall.2020 & Spring.2020

Related Attended Courses

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|--|---|
| ○ Molecular & Cellular Neuroscience(M.Sc.) | ○ Behavioral & Systems Neuroscience(M.Sc.) |
| ○ EEG Signal Processing (M.Sc.) | ○ Medical Image Analysis & Processing (M.Sc.) |
| ○ Neural Networks (M.Sc.) | ○ Foundations of Neuroscience |
| ○ Foundations of Biomedical Engineering | ○ Introduction to Machine Learning |
| ○ AI & Biological Computations | ○ Digital Signal Processing |
| ○ Probability & Statistics | ○ Physiology |

Other Activities

Sharif University Mountain Climbing Group: Leader of four mountain climbing trips

Resana(Main Association of Electrical Engineering): Member of the Central Council

Sharif University Mountain Climbing Group: Member of Main Committee

IGO 2019 (Iranian Geometry Olympiad): Member Executive Team

IGO 2018 (Iranian Geometry Olympiad): Member of Grading Team

Mabna Group(Designing Questions of Mathematics Olympiad): Member of the team