SABA CHARMI MOTLAGH

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SUMMARY OF QUALIFICATIONS

- Computational neuroscience graduate student with experience in applying machine learning techniques to real-life problems.
- Highly skilled in programming languages such as Python and MATLAB for data manipulation, analysis, and modeling.
- Proficient in data pre-processing, feature engineering, statistical analysis, and data visualization techniques. Familiar with machine learning libraries and frameworks such as Scikit-learn and PyTorch.

EXPERIENCE

Graduate Research Assistant
Western University & Vector Institute for AI

📅 Sep 2021 – Present 📍 London, ON

Project title: Studying neural dynamics of visual processes in challenging visibility conditions using EEG data and machine learning techniques

- Managing and conducting an independent experiment to investigate the hypothesis about the role of recurrent processing in visually challenging conditions
- Pre-processing, cleaning, and manipulating collected EEG data using toolboxes in MATLAB
- Leveraging machine learning tools such as support vector machines to analyze the clean data
- Utilizing inferential statistical analysis such as bootstrap and permutation tests to evaluate the achieved results

Research Assistant
Sharif University of Technology

📅 Sep 2019 – Aug 2020 📍 Tehran, Iran

Project title: Emotion recognition using EEG and ECG data fusion

- Extracting required features from two data modalities
- Utilizing different classifiers such as support vector machines (SVM), multilayer perception (MLP), and Bayesian networks (BN) to predict the emotional state of human subjects
- Comparing the predicted results for different fusion methods such as feature-level and decision-level and for different classifiers

Research Intern
IPM Institute for Research in Fundamental Sciences

📅 Jul 2019 – Sep 2019 📍 Tehran, Iran

Project title: Tracing smell detection using fNIRS signals recorded from the forehead

- Engaging in collaborative research with a team to record, pre-process, and classify olfactory signals related to odor perception using fNIRS neuroimaging and machine learning techniques

SKILLS

Programming Languages: Python, MATLAB, C/C++

Data Analysis & Visualization Tools: Matplotlib, Seaborn, MySQL, Tableau, Microsoft Power BI

ML Libraries & Frameworks: Numpy, Pandas, Scikit-learn, PyTorch

Web Development: HTML, CSS

Software and Tools: Microsoft Office, LaTeX, Git

Soft Skills: Project Management, Communication, Problem-solving, Teamwork

EDUCATION

M.Sc. in Computational Neuroscience
Western University

📅 Sep 2021 – Aug 2023 📍 London, ON (Expected)

GPA: 4/4

Selected Courses: Brain-Inspired AI, Advanced Artificial Intelligence

B.Sc. in Electrical Engineering
Sharif University of Technology

📅 Sep 2016 – Feb 2021 📍 Tehran, Iran

GPA: 3.8/4

Selected Courses: Computational Intelligence, Introduction to Machine Learning, Linear Algebra

HONORS AND AWARDS

- Recipient of 2022-2023 Vector Research Grant ($4000)
- One of Five Recipients of the Canada First Research Excellence Fund awarded to BrainsCAN at Western University ($50,000)

SELECTED PROJECTS

Supervised and unsupervised learning in predicting attentional blink
Western University

- Proposing a novel method to predict one of the most common phenomena in everyday life (attentional blink)
- Training a deep convolutional neural network in supervised and unsupervised manners to predict attentional blink
- Comparing the predicted model results with behavioral results from human participants

The Algonauts Project 2021 Challenge: How the Human Brain Makes Sense of a World in Motion
Western University

- Collaborating effectively with a team to actively participate in the Algonauts challenge
- Extracting required features from videos such as RGB and optical flow
- Training a two-stream I3D Convnet to predict the motion from provided video sets and extracting activation patterns from the model
- Comparing the model activation patterns with brain activations extracted from fMRI data using the RSA method

EEG Signal Analysis for Imagined Motor Movements
Sharif University of Technology

- Extracting required features from EEG data recorded during imagined motor movements
- Classifying these imagery motor movements using neural networks and evolutionary algorithms
- Assessing the classification models using different evaluation metrics to determine the most effective model

TEACHING EXPERIENCE

University of Western Ontario
📅 Sep 2021 – April 2023   📍 London, ON

- Fundamentals of Computer Science
- Introduction to Multimedia and Communications
  `Python` `HTML`

Sharif University of Technology
📅 Feb 2018 – Dec 2020   📍 Tehran, Iran

- Biosensors
- Numerical Computation
  `Python` `MATLAB`

- Recipient of Western Graduate Research Scholarship ($23,000)
- Sharif University of Technology M.Sc. Fellowship Award (Exempted from the graduate entrance exam)
- Member of Iran's National Elites Foundation
- Ranked 16th among 200,000 participants in the Iranian National University Entrance Exam in Mathematics Branch

PRESENTATIONS

- **Charmi Motlagh S.**, Joanisse MF., Wang B., Mohsenzadeh Y. (2023) *Neural dynamics of visual processes in challenging visibility conditions*, Organization for Human Brain Mapping (OHBM) annual meeting (accepted abstract for poster presentation)
- **Charmi Motlagh S.**, Joanisse MF., Wang B., Mohsenzadeh Y. (2023) *Neural dynamics of visual processes in challenging visibility conditions*, Lake Ontario Visionary Establishment (LOVE) annual conference (poster presentation)
- 3MT presentation at Neuroscience Research Day (NRD) at Western University

CERTIFICATIONS

Complete SQL Mastery
Code with Mosh

- Everything about SQL, from basics to more complex and real-life examples and applicable concepts

Google Data Analytics Professional Certificate
Google

- Foundations: Data, Data, Everywhere
- Ask Questions to Make Data-Driven Decisions

VOLUNTEER ACTIVITIES

- Member of the Brain and Mind Coffee Talk Committee at Western Institute for Neuroscience
- Brainhack Western 2022 staff
- Member of the Resana Student Club during Sharif Neuroscience Symposium (SNS 2019)