Mehrab Hamidi

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EDUCATION

UNIVERSITÉ DE MONTRÉAL
PhD in Computer Science
Since 2024

MCGILL UNIVERSITY
Ms.c. in Computer Science
2022-2024

SHARIF UNIVERSITY OF TECHNOLOGY
B.Sc. in Computer Science
2017-2022
Minor in Mathematics
2022-2024

INTERESTS

Deep Learning theory
World Models
Energy based Models
Interpretability and Explainability
Reinforcement Learning
Mechanistic Interpretability

COURSEWORK

GRADUATE
Theory of Deep Learning
Probabilistic Graphical Models
Bayesian Method in Statistics and Learning
Mathematical Methods

TEACHING ASSISTANT
Mathematical Tools for CS
Statistical Machine Learning

SKILLS

PROGRAMMING
Java • C++ • Swift • Matlab
Jax • Python • R • LaTeX
FRAMEWORKS
Pytorch • Numpy • Networkx

HONORS

Awarded Inter-Math-AI Scholarship IMA 2024
Ranked 130 among one hundred thousand student attendance in university entrance exam (Konkur) 2017

EXPERIENCE

STUDY NEURAL COLLAPSE IN THE LENS OF GEOMETRY | 2024
I worked on exploring architectural symmetries and geometrical causes related to neural collapse and lossles compression.

SYNTHETIC BENCHMARK OF TGL METHODS | 2024
This project focuses on proposing a collections of synthetic tasks specifically designed to benchmark the ability of current TGL methods to capture and model archetypal sequential structures and patterns in dynamic graphs.

REVERSE-ENGINEERING DEEP RELU NETWORKS | 2023
This project involved the development of techniques to deduce the weights, biases, and architecture of deep ReLU networks solely from input-output queries, without prior assumptions about their structure.

RA INTERN | 2021 | Mcgill
I worked on variational likelihood-free method for causal discovery in biological data

MACHINE LEARNING SCIENTIST | 2020-2021 | AIMED, Iran
Worked on complex medical-related problems and issues using data (mostly image type data) from internal and external sources and applied DL models to healthcare problems such as detecting disease from CTiamges during COVID

MACHINE LEARNING ENGINEER | 2019-2020 | Fanap, Iran
I worked on a project about Automatic Speech Recognition using cnn-based model to capture time dependent features

PUBLICATIONS

INTERPRETABILITY IN ACTION: EXPLORATORY ANALYSIS OF VPT, A MINECRAFT AGENT | ICML2024 MI workshop
We performed exploratory analysis on the Video PreTraining (VPT) Minecraft playing agent, one of the largest open-source vision-based agents. We aimed to illuminate its reasoning mechanisms by applying various interpretability techniques.

SOMATIC POINT MUTATIONS ARE ENRICHED IN NON-CODING RNAS WITH POSSIBLE REGULATORY FUNCTION IN BREAST CANCER | Nature Communications Biology 2022
This pioneering study introduced an integrative pipeline to analyze the mutational load across non-coding RNA genes in six cancer types, identifying significant cancer-specific mutations.

PREDICTING SURVIVAL OF IRANIAN COVID-19 PATIENTS INFECTED BY VARIOUS VARIANTS INCLUDING OMICRON FROM CT SCAN IMAGES AND CLINICAL DATA USING DEEP NEURAL NETWORKS | Elsevier, Heliyon 2023
We proposed a deep neural network architecture for predicting survival based on simple clinical features, blood tests, CT scan images of lungs, and the patients' planned treatment. The model was trained on patients data from the some local hospitals.