

MOHAMMAD-JAVAD DARVISHI-BAYAZI

Montreal, Quebec, Canada



Education

University of Montreal (UMontréal - Mila(Quebec AI Institute))

2019 – Present

Doctor of Philosophy in Biomedical Engineering

Montreal, Canada

- Topic: **R3: Robust and Reliable Deep Learning Models for Real-World Applications**
- Supervisors: Jocelyn Faubert (UdeM, FaubertLab), Irina Rish (UdeM, Mila)

Shahed University

2014 – 2018

Master of Science in Biomedical Engineering - Bioelectrics

Tehran, Iran

- Topic: Causality and Information Flow in Multivariate Time Series

Yazd University

2010 – 2014

Bachelor of Science in Electrical Engineering

Yazd, Iran

- Topic: Smart Greenhouse Monitoring and Control System Using Industrial Microprocessors

Coursework and Certificate

- Deep Representation Learning
- Generative AI with LLMs
- Statistical Pattern Recognition
- Artificial Neural Network
- Digital Signal Processing
- Digital Image Processing
- Nonlinear Dynamics and Chaos
- Biomedical Systems Modeling
- Microprocessors

Technical Skills

Programming languages: Python, C, Matlab, R, Bash

Developer Tools: Git, PyTest, Docker, VS Code, Jupyter Notebook, Unix shell,

Data Mining and Machine Learning: PyTorch, TensorFlow, Scikit-learn, Matplotlib, Seaborn

Technologies/Frameworks: Wandb, HuggingFace, Hydra, Slurm, Cluster, HPC

Cloud: Google Cloud Platform, Amazon Web Services (AWS SageMaker)

Domain: Computer Vision, Generative AI, Large Language Models (LLMs), Foundation Models, Time Series

Work Experience

Mila - Quebec AI Institute

Jan. 2019 – Present

Graduate Research Assistant

Montreal, Canada

- Designed and deployed large-scale foundation models for time series forecasting. These models inherently possess zero-shot capabilities, requiring no further tuning for immediate application.
- Developed and implemented strategies and benchmarks to enhance the robustness and reliability of deep learning models, effectively addressing real-world challenges to ensure safe and dependable machine learning deployment.
- Evaluated over 1000 models to assess their generalization capabilities and human-level behaviours, contributing to advancements in both unimodal and multimodal AI applications.
- Published 3 peer-reviewed articles in highly ranked journals, 5 papers in top-tier conferences, and preprints, which have been widely utilized in subsequent research and projects.
- Mentored an intern for Vivid Machines Internship as part of a professional internship program, highlighting leadership and instructional skills.
- Collaborated and communicated effectively with multidisciplinary teams to translate research findings into actionable insights and scalable solutions, fostering innovation and continuous improvement in AI technologies.

NBML - National Brain Mapping Laboratory

2017 – 2018

Signal Processing Engineer

Tehran, Iran

- Developed pipelines for researchers, doctors, and practitioners to study brain function and develop therapeutic methods.
- Analyzed various types of signals and images using computational tools to facilitate clinical decision-making.
- Performed statistical analysis on diverse datasets to identify trends and patterns in various metrics.

Hummingbird - AI startup

July, 2022 – Present

Chief Executive Officer

Montréal, Canada

- Leading development of foundation models for time series analysis, enabling more accurate planning and decision-making in finance, economics, governance, and medicine.

Profile

Driven by curiosity and an analytical mindset, I bring a fresh perspective to any data science team. My experience spans research, teaching, and leading teams in AI-focused projects. I'm experienced at developing deep learning models and excel at managing multiple responsibilities, from academia to entrepreneurship. Committed to using AI for societal benefits, I have a successful history of fundraising for health-related and technological advancements.

Interest

- Artificial Intelligence (AI)
- Machine Learning (ML)
- Deep Learning (DL)
- Representation Learning
- Self-Supervised Learning (SSL)
- Out of Distribution Generalization
- Transfer Learning
- Cognitive Neuroscience
- AI for Health
- Brain-Computer Interface (BCI)
- Information retrieval
- Human in Loop

Teaching Activity

UdeM/Mila

Jan. 2022 – May 2022

Teaching Assistant at *IFT 6135 - Representation Learning - SSL, NLP, CV*

Montreal, Canada

- Assisted Dr. Aaron Courville, a pioneer in AI and deep learning, in teaching self-supervised learning techniques.
- Provided support to students by addressing questions and assisting with coding issues during the course.

Ivado/Mila

Mar. 2021 – Apr. 2021

Teaching Assistant at *Deep Learning Spring School*

Montreal, Canada

- Assisted machine learning practitioners from various industries in understanding and implementing advanced deep learning techniques.

Selected Publications

- **Darvishi Bayazi, M. J., ..., Faubert, J., & Rish, I. (2023). Amplifying Pathological Detection in EEG Signaling Pathways through Cross-Dataset Transfer Learning.** CIBM, [[Link](#), IF:7.7, Acceptance Rate:13%]
- Rasul, K., Ashok, A., ..., **Darvishi Bayazi, M. J., ..., & Rish, I. (2024). Lag-Llama: Towards Foundation Models for Probabilistic Time Series Forecasting.** [[Link](#)]
- **Darvishi Bayazi, M. J., Law, A., Romero, S. M., Jennings, S., Rish, I., & Faubert, J. (2023) Beyond performance: The role of task demand, effort, and individual differences in ab initio pilots.** Scientific Reports. [[Link](#), IF:4.9]
- Gagnon-Audet, J. C., Ahuja, K., **Darvishi-Bayazi, M. J., Dumas, G., & Rish, I. (2023) WOODS: Benchmarks for Out-of-Distribution Generalization in Time Series Tasks.** TMLR, ICLR 2024. [[Link](#), Featured]
- **Darvishi Bayazi, M. J., Motie Nasrabadi, A., & Dubé, C. (2021). Frequency-specific network effective connectivity: ERP analysis of recognition memory process by directed connectivity esti.** MBEC, [[Link](#)]
- Albuquerque I, Monteiro J, **Darvishi M**, Falk TH, & Mitliagkas I. (2019) **Generalizing to unseen domains via distribution matching.** arXiv preprint arXiv:1911.00804. [[Link](#)]

Honors & Awards

Artificial Intelligence Applications in Healthcare	2021
Microsoft Diversity Award	2020
Bourse d'exemption des droits de scolarité supplémentaires	2019 – 2020
Master's Thesis Research Grants from Cognitive Science and Technologies Council	2018
Distinguished Student, Ranked 1 th among all graduated students of Biomedical Engineering department	2018
Ministry of Science and Technology scholarship (7 years, BSc, MSc)	2010 – 2017

Leadership / Extracurricular

SIGHT Montreal

Sep. 2019 – Jan. 2024

President, Vice-president and Webmaster

IEEE

- Organized [AI4Good event](#) and the [AI against COVID-19 competition](#), raised 20K⁺ CAD from Microsoft Canada
- Designed and launched the [website of the group](#)

1st and 2nd IBCIC

Jan. 2017 – 2018

Vice-Chair of the Executive Committee

NBML

- Designed a Brain-computer Interface competition, [TV Report](#)

Languages

English, Proficient | French, Beginner