

# JAVAD BAYAZI

Montreal, Quebec, Canada

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## Profile

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Driven by curiosity and an analytical mindset, I bring a fresh perspective to any Machine Learning team. My experience spans research, teaching, and leading teams in AI-focused projects. I'm experienced in developing deep learning models and excel at managing multiple responsibilities, from academia to entrepreneurship.

## Technical Skills

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

**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 (CV), Natural Language Processing (NLP), Generative AI, Large Language Models (LLMs), Large Multimodal Models (LMMs), Foundation Models, Time Series

## Work Experience

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### Mila - Quebec Artificial Intelligence Institute

Jan. 2019 – Present

*Graduate Research Assistant - PhD Student*

*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.
- 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.
- Collaborated and communicated effectively with multidisciplinary teams (CAE, NRC, Marinvent and Morgan Stanley) to translate research findings into actionable and scalable solutions for several industries.

### 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.

## Education

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### University of Montreal (UMontréal - Mila (Quebec Artificial Intelligence Institute))

2019 – Present

*Doctor of Philosophy in Biomedical Engineering (Machine Learning)*

*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 and Image Processing
  - Nonlinear Dynamics and Chaos
- Biomedical Systems Modeling
  - Microcontrollers
  - SQL for Data Science

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]
- Albuquerque I, Monteiro J, **Darvishi M**, Falk TH, & Mitliagkas I. (2019) **Generalizing to unseen domains via distribution matching.** arXiv preprint arXiv:1911.00804. [Link]
- Ghaffari, H., Yoonessi, A., **Darvishi, M. J., & Ahmadi, A. (2018). Normal electrical activity of the brain in obsessive-compulsive patients after anodal stimulation of the left dorsolateral prefrontal cortex.** Basic and clinical neuroscience, 9(2), 135. [Link]

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.

Honors & Awards

- Artificial Intelligence Applications in Healthcare2021
- Microsoft Diversity Award2020
- Bourse d'exemption des droits de scolarité supplémentaires2019 – 2020
- Master's Thesis Research Grants from Cognitive Science and Technologies Council2018
- Distinguished Student, Ranked 1<sup>th</sup> among all graduated students of Biomedical Engineering department2018
- 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<sup>+</sup> CAD from Microsoft Canada
  - Designed and launched the website of the group
- 1<sup>st</sup> and 2<sup>nd</sup> IBCIC

Jan. 2017 – 2018

Vice-Chair of the *Executive Committee* *NBML*

- Designed a Brain-computer Interface competition, TV Report

Languages

English, Proficient | Persian, Native | French, Beginner