JAVAD BAYAZI

Montreal, Quebec, Canada

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Profile

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 industry.

Technical Skills

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

Mila - Quebec Artificial Intelligence Institute
Graduate Research Assistant - PhD Student

Jan. 2019 – Present
Montreal, Canada

- Designed and deployed large-scale foundation models for time series analysis. These models inherently possess general capabilities, requiring no further tuning for immediate application in finance, medicine, weather, and traffic.
- Developed strategies and benchmarks to enhance the robustness and reliability of deep learning models in time series analysis, effectively addressing real-world challenges to ensure safe and reliable 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
Data Scientist

2017 – 2018
Tehran, Iran

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

Hummingbird - AI startup
Chief Executive Officer

July, 2022 – July, 2023
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

University of Montreal (UMontréal - Mila (Quebec Artificial Intelligence Institute))
Doctor of Philosophy in Biomedical Engineering (Machine Learning)

2019 – 2024
Montreal, Canada

- Topic: **R3**: **R**obust and **R**eliable Deep Learning Models for **S**equence Modeling.
- Supervisors: Jocelyn Faubert (UdeM, FaubertLab), Irina Rish (UdeM, Mila)

Shahed University
Master of Science in Biomedical Engineering - Bioelectrics

2014 – 2018
Tehran, Iran

- Topic: Causality and Information Flow in Multivariate Time Series

Yazd University
Bachelor of Science in Electrical Engineering

2010 – 2014
Yazd, Iran

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

Coursework and Certificate

- <u>Deep Representation Learning</u>
- <u>Generative AI with LLMs</u>
- Statistical Pattern Recognition
- Artificial Neural Network
- Digital Signal and Image Processing
- Nonlinear Dynamics and Chaos
- Biomedical Systems Modeling
- Microcontrollers
- <u>SQL for Data Science</u>

Interests

- Artificial Intelligence (AI)
- Machine Learning (ML)
- Deep Learning (DL)
- Representation Learning (RL)
- Self-Supervised Learning (SSL)
- Out of Distribution Generalization
- Foundation Models (FM)
- Transfer Learning (TL)
- AI for Medicine (AI4M)
- AI for Finance (AI4M)
- Time Series Analysis (TS)
- Large language model (LLM)

Selected Publications

- **Darvishi Bayazi, M. J.**, ..., Faubert, J., & Rish, I. (2023). **Amplifying Pathological Detection in EEG Signaling Pathways through ... Transfer Learning**. CIBM, [<u>Link</u>, IF:7.7, Acceptance Rate:13%][DL,TL,AI4M]

- Rasul, K., Ashok, A., ..., **Darvishi Bayazi, M. J.**, ..., & Rish, I. (2024). **Lag-Llama: Towards Foundation Models for Probabilistic Time Series Forecasting**. [<u>Link</u>][DL,TL,LLM,TS]

- **Bayazi, J.**, , & Rish, I. (2024). **General-Purpose Foundation Models for Time-Series**. [DL,TL,LLM,TS,AI4M]

- **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 .** Scientific Reports.[<u>Link</u>, IF:4.9][ML,TS, AI4M]

- 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. [<u>Link</u>, Featured][DL,TL,TS]

- Albuquerque I, Monteiro J, **Darvishi M**, Falk TH, & Mitliagkas I. (2019) **Generalizing to unseen domains via distribution matching**. arXiv preprint arXiv:1911.00804. [<u>Link</u>][DL,TL,TS]

- 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. [<u>Link</u>][TS, AI4M]

Teaching Activity

UdeM/Mila   **Jan. 2022 – May 2022**

Teaching Assistant at <u>IFT 6135 - Representation Learning</u> - 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 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 1th 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 <u>AI4Good event</u> and the <u>AI against COVID-19 competition</u>, raised 20K$^+$ CAD from Microsoft Canada
- Designed and launched the <u>website of the group</u>

1st and 2nd IBCIC   **Jan. 2017 – 2018**

Vice-Chair of the Executive Committee   *NBML*
- Designed a Brain-computer Interface competition, <u>TV Report</u>

Languages

English: Proficient | Persian: Native | French: Intermediate (actively learning)