Mehdi Azad

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https://mabbasiazad.github.io/portfolio

Work experience

Jan 2024 (expected start date) — **Lecturer** — Toronto, Canada
George Brown College, School of Computer Technology
Instructed college students in computer science and technology

May 2021 - Jun 2022(FT) - Nov 2023(Casual) — **Research Assistant/ ML Scientist** — Toronto, Canada
Hospital for Sick Children (SickKids), Neurosciences and Mental Health
AI expert in a team of experimental and computational neuroscientists

↦ *Built a biotech device prototype automating pain behavior testing in mice (resulting in a high impact publication and a US provisional patent)*

- Applied end-to-end data pipelines for computer vision-based real-time motion tracking robot: Developed & refined models, fine-tuned & optimised their performance

↦ *Proposed a novel score index to evaluate pain behavioural response in preclinical study*

- Drawn insight from withdrawal latency data set followed by through exploratory data analysis/visualization to find meaningful patterns

↦ *Investigated masking pain signals in spinal cord, before perceiving the brain*

- Removed artifacts from large data set in high frequency (1KHz) spinal cord stimulation

Sep 2019 - Aug 2020 — **Data Scientist** — Waterloo, Canada
University of Waterloo, Spafford Neurobiology Lab
Data scientist focusing on solving life science problems

↦ *Developed large language models (LLMs) for understanding and designing proteins*

- Predicted antibody 3D structure with generative AI, used in drug discovery

↦ *Pioneered recording and modeling electro physiological data emanating from living organisms*

↦ *Concisely communicated research findings to non-technical and technical audience*

Sep 2014 - Feb 2017 — **Mechatronics/Control Systems Engineer** — Tehran, Iran
Energy Industries Engineering & Design (EIED)
Control software developer - Mentor and coach other designers

↦ *Supervised control system design of oil & gas refinery plant (mega project)*

↦ *Interacted closely with a multi disciplinary team in factory and site acceptance test*

May 2010 - Aug 2014
PoyaKaran Rad Co.
Control systems specialist leading engineering design

↦ *Selected appropriate controllers, servo motors, and motor drivers, to achieve 5 μm accuracy in CNC machines motion control (flagship project)*

Sep 2007 - May 2010 — **Associate Data Scientist** — Tehran, Iran
DanaShahr Co.
Data scientist in a technical and business team designing a technology park

↦ *Interviewed 100+ Iranian oil and gas companies and business stakeholders to identify business needs that must be addressed by policy makers of a technology park*

↦ *Led expert panels and brainstorming sessions to understand the business data to provide advisory recommendations and solutions to the client to make strategic decisions*

Education

2019 - 2020 **University of Waterloo**, MEng in Systems Design with Distinction
Specialization: Artificial Intelligence and Machine Learning
Project: Natural language processing and modeling (NLP)

- Implementing sequence-to-sequence models (LSTM/ transformer) for machine translation and auto-regressive text generation

2004 - 2007 **Iran University of Science & Technology**, MSc in Mechatronics
Thesis: Optimal assign. of seismic vibration control actuators via *genetic algorithm*
Project: Model-based fuzzy control of an auto swing-up furuta inverted pendulum

2000 - 2004 **Isfahan University of Technology**, BSc in Mechanical Engineering

Selected Publications & Patents

C. Dedeck, **M. Azadgoleh**, and S. Prescott. Reproducible and fully automated testing of nocifensive, Cell Reports Methods, November 27, 2023.

C. Dedeck, **M. Azadgoleh**, and S. Prescott. Apparatus for automated pain testing in mice. US provisional patent (18/371.847)

M. Azadgoleh, and A. Markazi. Optimal assignment of seismic vibration control actuators using genetic algorithm. Int. J. of Civil Eng., Structure & Earthquake, 12(1), 21-34, 2014

M. Azadgoleh, B. Hoseinkhani, and A. Markazi. Model-based fuzzy control of an auto swing-up furuta inverted pendulum. IR Patent, 44644, 2007

Certificates

- **Big Data Analysis with Scala and Spark**, EPFL
- **Build Generative Adversarial Networks (GANs)**, Stanford University
- **Reinforcement Learning (RL) Specialization**, University of Alberta
- **Functional Programming Principles in Scala**, EPFL
- **Synapses, Neurons and Brains**, Hebrew University of Jerusalem
- **DNA Decoded**, McMaster University

Computer literacy

Programming Language	Python/ Scala/ SQL
Tools & Frameworks	PyTorch/ TensorFlow/ Apache Spark/ Scikit-learn/ Docker/ Git
CAD/CAM	Autodesk Inventor
Infrastructure	High Performance Computing/ AWS

Skills

Machine Learning	Computer Vision	Functional Programming	Data Science
Reinforcement Learning	Signal Processing	OOPs	Big Data
Deep Learning	Natural Language Processing	Control & Robotics	Statistical Modeling