Mehdi Azad

m32abbas@uwaterloo.ca ⋄ +1 6475627371
https://github.com/mabbasiazad |

Work experience

Sep 2023 - Present
Instructor/ AI and Programming Toronto, Canada
STEM Canada, Darsoon Online Tutoring
Instructed students in the fields of machine learning and python programming
↦ *Mentored students of various age groups to excel in their assigned projects*

May 2021 - Present
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: Deployed, monitored quality and retrained models (MLOps project)

↦ *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 outcomes to non-technical and technical audience*

Mechatronics/Control Systems Engineer Tehran, Iran
Sep 2014 - Feb 2017
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 to identify business needs that must be addressed by policy makers of a technology park*
↦ *Led expert panels and brainstorming sessions to develop an understanding of the business data to provide advisory recommendations 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

Skills

Machine Learning	Computer Vision	Data Science	CAD/CAM
Reinforcement Learning	Signal Processing	Big Data	Robotics
Deep Learning	Natural Language Processing	Statistical Modeling	OOPs