Mehdi Azad

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https://mabbasiazad.github.io/portfolio

Work experience

Jan 2024 - Present
College Professor
George Brown College, School of Computer Technology
Instructor enhancing student understating of fundamental concepts
↦ Courses: Data Structure and Algorithm/ Object-Oriented Programming

May 2021 - Jun 2022(ft) - Nov 2023(Casual)
Machine Learning Scientist
Hospital for Sick Children (SickKids)
AI researcher 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) - MLOps project

- Performed mechatronics system design and built prototype of motion tracking robot
- Applied ML pipelines for computer vision-based real-time tracking

↦ Proposed a novel and reproducible metric to evaluate pain behavioural response

- Designed experiments and collected/cleaned data related to pain sensitivity in mice
- Drawn meaningful patterns from data through exploratory data analysis/visualization and developed a deep learning model to predict mice behaviour

Sep 2019 - Aug 2020
Research Assistant
University of Waterloo, Spafford Neurobiology Lab
Systems design engineer focusing on solving life science problems
↦ Pioneered recording electrophysiological signal emanating from living organisms
↦ Effectively communicated research findings to both technical and non-technical audiences

Sep 2014 - Feb 2017
Mechatronics Specialist
Energy Industries Engineering & Design (EIED)
Control systems consultant in natural gas refinery plants EPC projects
↦ Supervised and endorsed control systems design to ensure compliance with requirements
↦ Interacted with multi disciplinary teams in factory and site to deliver functional packages

May 2010 - Aug 2014
PoyaKaran Rad
Mechatronics engineer leading electromechanical systems design
↦ Achieved precise motion control in CNC machines with 5 μm accuracy

Education

University of Waterloo, MEng in Systems Design with Distinction
Specialization: Artificial Intelligence and Machine Learning

Isfahan University of Technology, BSc in Mechanical & Mechatronics Eng.

Independent Project(s)

Developed Transformers model from scratch and applied it to NLP predictive and generative tasks. https://github.com/mabbasiazad/NLP-Projects

Investigated large language models (LLMs) application in protein engineering; predicting protein 3D structure and molecular docking.

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 & Courses

- **NLP/LLMs Course**, Hugging Face
- **Community-driven Course on Computer Vision**, Hugging Face
- **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

Computer literacy

Programming Language	Python/ Java/ SQL/ C#/ Scala
Tools & Frameworks	PyTorch/ TensorFlow/ Apache Spark/ Scikit-learn/ Pandas/ Git
Infrastructure	High Performance Computing (HPC)
3D Modeling	Autodesk Inventor

Skills

(Generative) AI	Computer Vision	Programming	Visualization	Teamwork
Machine Learning	Reinforcement Learning	Statistical Inference	3D Modeling	Strategic Thinking
Data Science	NLP/ LLM	Deep Learning	MLOps	