Matin Moezzi

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Education

Master of Applied Science, Industrial Engineering, University of Toronto **2022 – Present**

CSC2626: Imitation Learning for Robotics	A	MIE1615: Markov Decision Processes	A
CSC2506: Probabilistic Learning & Reasoning	A+	MIE1628: Cloud-Based Data Analytics	A

Bachelor of Computer Science—Minor in Mathematics, Faculty of Mathematics & Computer Science, Amirkabir University of Technology (Tehran Polytechnic) – Selected Courses GPA: 4.0/4.0 **2016 – 2021**

Research Experience

Imitation Learning and Sim-to-Real Transfer Learning [Code] **Jan 2022 – Present**

(1) Implemented a virtual model of MyCobot, a 6-Dof robotic arm, in Mujoco from scratch
(2) Generated expert-like trajectories using inverse kinematics for the pick-and-place task
(3) Experimented imitation learning methods like Behavioral Cloning and GAIL approaches
(4) Implemented a Python interface to transfer the learned policy in Mujoco to physical robot

Mitacs Accelerate Internship Program [Report][Code] **May 2022 – Aug 2022**

(1) Successfully implemented virtual model of MyCobot, a 6 DOF robotic arm, in Nvidia Create and Isaac Sim
(2) Implemented "slide", "push" and "pick-and-place" tasks in Nvidia Isaac Gym
(3) Experimented with continuous RL algorithms like DDPG, PPO, TQC

Data-Efficient Hierarchical Deep Q-Network using Importance Sampling [PDF][Code] **Oct 2020 – Nov 2021**

Developed an approach to improve data-efficiency of the hierarchical deep Q-network algorithm (h-DQN) using the importance sampling method

An Uncertainty-Aware Pseudo-Label Selection Framework using Regularized Conformal Prediction [PDF][Code] **Sep 2020 – Jun 2021**

Employing uncertainty sets yielded by the conformal regularization algorithm in the uncertainty-aware pseudo-label selection framework to fix the poor calibration neural networks, reducing noisy training data

Solving the System of ODEs of the Control Spread of Ebola Virus Epidemic using Deep Neural Networks [Code] **Sep 2019 – Aug 2021**

(1) Implemented a second-order optimization method, L-BFGS, to address the convergence issue. (2) Implemented regularization and initialization methods and adjusted hyper-parameters and network architecture to mitigate the overfitting and generalization problems
Under Supervision of **Prof. Mostafa Abbaszadeh** & **Prof. Mohammad B. Menhaj**

Adding L-BFGS Optimization Algorithm for Training Deep Neural Networks to *NeuroDiffEq* library [Code] **Sep 2019 – Aug 2021**

Work Experience

Applied Machine Learning Intern, Vector Institute, Toronto, ON **Winter 2023**

Contributing to the Model-Based Reinforcement Learning for Energy Efficient Data Centre HVAC Control Project

Software Developer, iTours Online Travel Agency Co., Tehran, Iran **2018 – 2019**

(1) Implemented enterprise B2B Restful Web Services with microservice architecture (2) Developed Asp.Net Core Web Apps & Web APIs (3) Project planning and management under the Scrum principles

Web Developer, Parsian Insurance Co., Tehran, Iran **2017 – 2018**

(1) Effectively refactored previous projects based on Design Patterns & SOLID principles (2) Successfully Developed an Asp.Net web application for the insurance management system

Teaching Experience

CSC2516: Neural Networks and Deep Learning [Winter 2023] • **MIE567: Dynamic and Distributed Decision Making** [Winter 2023] • **APS1080: An Introduction to Reinforcement Learning** [Fall 2022, Winter 2023] • **MIE1615: Markov Decision Processes** • **MIE236: Probability** [Fall 2022] • **CSC369: Operating Systems** [Fall 2022] • **CSC369: Operating Systems** [Fall 2022], Graduate Teaching Assistant, University of Toronto

Neural Networks (Graduate Level) [Spring 2021] • **Operating Systems** [Fall 2019, Spring 2020, Spring 2021] • **Numerical Linear Algebra** [Spring 2020], Teaching Assistant, Amirkabir University of Technology

Online Degrees & Courses

Artificial Intelligence Nanodegree Peter Norvig & Sebastian Thrun, Udacity [See the Certificate]

Reinforcement Learning Specialization, University of Alberta, Coursera [See the Certificate]

Practical Reinforcement Learning (with honors), HSE, Coursera [See the Certificate]

Deep Learning Specialization, Andrew Ng, deeplearning.ai, Coursera [See the Certificate]

Cutting-Edge AI: Deep Reinforcement Learning in Python, Udemy [See the Certificate]

Natural Language Processing Specialization, deeplearning.ai, Coursera [See the Certificate]

TensorFlow Developer Specialization, deeplearning.ai, Coursera [See the Certificate]

Machine Learning, Andrew Ng, Stanford University, Coursera [See the Certificate]

Network Function Virtualization, Georgia Institute of Technology, Coursera [See the Certificate]

Software Defined Networking, The University of Chicago, Coursera [See the Certificate]

Generative Adversarial Networks Workshop, [See the Certificate]

Skills

Programming Languages: C/C++, Python, MATLAB, R, Java, C#, SQL, Javascript

Libraries: Pandas, Seaborn, Scikit-learn, PyTorch, TensorFlow, Keras, OpenAI Gym, Mujoco Physics Engine, Nvidia Isaac Sim, WandB, Stable-Baselines3, RLLib, RoboGym, Robosuite

Software Programming: .Net/ Asp.Net, Microservices, SOLID Principles, SOAP & Restful Web Services

Computer Network: TCP/IP, SDN & NFV, Mininet Emulator, Wireshark, Boson

Others: Linux Server Administration, Bash Scripting, MySQL, LaTeX, Git, Raspberry Pi, ROS,

Activities

Editorial Board Member of Student Scientific Journal, Mathematics & Computer Science Faculty
Amirkabir University of Technology, 2020 - 2022

Updated by Feb 2023