Tanya Djavaherpour

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Education

McMaster University Hamilton, Ontario, Canada
M.Sc., Computer Science Sep. 2023 – Apr. 2025 (Expected)
Courses:
Evolutionary Computation: A+ Linear Optimization: A
Machine Learning on Graphs: A Development of Scientific Computing Software: A

Amirkabir University of Technology (Tehran Polytechnic) Tehran, Iran
B.Sc., Computer Engineering, GPA: 3.75/4 (18.14/20) Sep. 2018 – Jul. 2023
Highlighted Courses:
Algorithm Design: 19.25/20 Data Structures and Algorithms: 19/20
Engineering Statistics: 20/20 Artificial Intelligence: 20/20

Research Experience

Research Assistant, McMaster University Sep. 2023 – Present
Research on evaluating Tangled Program Graphs (TPG) as a memory mechanism for Deep RL.
Under the supervision of Dr. Stephen Kelly.

Research Assistant, Amirkabir University of Technology Sep. 2022 – Jul. 2023
Design and implementation of a software system for underwater image processing.
Final bachelor's thesis project under the supervision of Dr. Mohammad Rahmati.

Research Intern, IPM Institute for Research in Fundamental Sciences Jul. 2021 – Oct. 2021
Researching AI-based financial market analysis, testing DL architectures, and developing hybrid models by integrating components of existing frameworks.
Under the supervision of Dr. Dara Rahmati & Dr. Saeid Gorgin.

Publications

Evolving Many-Model Agents with Vector and Matrix Operations in Tangled Program Graphs 2024
Tanya Djavaherpour, Ali Naqvi, Eddie Zhuang, Stephen Kelly, *Genetic Programming Theory & Practice XXI.*

Tangled Program Graphs with Indexed Memory in Control Tasks with Short Time Dependencies 2024
Tanya Djavaherpour, Ali Naqvi, Stephen Kelly, 16^{th} International Conference on Evolutionary Computation Theory and Applications (ECTA). Link to the Paper

Investigation of Sadness on Brain Mathematical Ability Using Musical and Semantical Excitation 2019
Ali Davoodi Moghadam, Ali Jamali, Tanya Djavaherpour, Behrad Taghibeyglou, 8^{th} Conference of Basic and Clinical Neuroscience Congress, Razi Hall, Tehran, Iran.Link to the Paper

Presentations

Enhancing Collaboration in Tangled Program Graphs with Shared Memory for MuJoCo Continuous Control Tasks 2025
Lightning Talk, 5 Minute Thesis (5MT), Women in Science and Engineering (WISE), University of Toronto, Toronto, Canada.

Tangled Program Graphs with Indexed Memory in Control Tasks with Short Time Dependencies 2025
Seminar Presentation, Vaader Seminars, IETR, University of Rennes, Rennes, France.

Tangled Program Graphs with Indexed Memory in Control Tasks with Short Time Dependencies 2024

Conference Presentation,16^th International Conference on Evolutionary Computation Theory and Applications (ECTA), Porto, Portugal.

Tangled Program Graphs with Indexed Memory in Control Tasks with Short Time Dependencies 2024

Poster Presentation, 7^{th} Computing and Software Poster and Demo Competition, McMaster University, Hamilton, Canada.

Notable Projects

G-Mixup: An Approach for Graph Data Augmentation to Enhance Graph Classification Models' Performance Link to GitHub Apr. 2024

Snail Jumper: An Evolutionary Game with Genetic Algorithm and Neural Network Link to GitHub Jun 2022

VFH-PathPlanning: Controlling and Moving a Mobile Robot from Starting Point to the Specific Goal in ROS Link to GitHub Jun 2022

Plants vs. Zombies Game: A Single and Multiplayer Game Written in Java Using Swing and Graphics 2D Link to GitHub Feb. 2021

Teaching Experiences

Teaching Assistant, McMaster University

Data Structures and Algorithms for Mechatronics (MECHTRON 2MD3) Winter 2024, 2025

Software Development (SFWRENG 3K04) Fall 2024

Computer Architecture (CS 2GA3) Fall 2023, 2024

Teaching Assistant, Amirkabir University of Technology

Principles of Artificial Intelligence Fall 2022

Advanced Programming Spring 2022

Algorithm Design Spring 2022

Microprocessor and Assembly Language Spring 2022

Fundamentals of Computer Programming Fall 2020, 2021

Technical Skills

Programming Languages: Python, C++, Java, MATLAB, SQL

Databases: MySQL, SQLServer

Libraries: PyTorch, Keras, NumPy, Pandas, Matplotlib, Pylint

Version Control: Git, GitHub/Gitlab

Development Methodologies: Agile, Test-Driven Development

Honors and Awards

EGS Travel and Professional Development Award, McMaster University Engineering Graduate Society 2024

3^{rd} Place Poster in the 7^{th} Computing and Software Poster and Demo Competition, McMaster University 2024

Received a 2-Year Full Scholarship (Graduate Scholarship and Research Scholarship) Valued at 34K CAD, McMaster University 2023

3^{rd} Place in Deep Learning Implementation Workshop Project at Amirkabir University 2019

1^{st} Place in Junior Soccer B Light Weight Super Team, RoboCup Iran Open 2015

Link to Certificate

Workshops

Deep Neural Networks Implementation Using PyTorch Link to Certificate 2019

Amirkabir University of Technology

Digital Fabrication and 3D Printing Link to Certificate 2019

Amirkabir University of Technology

Introduction to MATLAB Programming Link to Certificate 2019

University of Tehran

Volunteer

International Grad Navigator, McMaster University Jul. 2024 – Dec. 2024