

Tanya Djavaherpour

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Education	McMaster University M.Sc., Computer Science <i>Thesis:</i> Optimizing Genetic Programming Agents with TPG and Memory Structures	Hamilton, Ontario, Canada 2023-2025
	Amirkabir University of Technology (Tehran Polytechnic) B.Sc., Computer Engineering <i>Thesis:</i> Design and Implementation of a Software System for Underwater Image Processing.	Tehran, Iran 2018 – 2023
Research Interests	Reinforcement Learning, Machine Learning Genetic Programming, Evolutionary Computation, Neuroimaging Data Analysis	
Research Experience	Research Assistant, McMaster University Research on neural basis of language and speech, using computational models. Under the supervision of Dr. Christian Brodbeck at Brodbeck Lab. Graduate Student Research Assistant, McMaster University Research on evaluating Tangled Program Graphs (TPG) as a framework to solve Deep RL tasks. Under the supervision of Dr. Stephen Kelly at Creative Algorithms Lab. Research Intern, IPM Institute for Research in Fundamental Sciences Researching AI-based financial market analysis, testing DL architectures and developing hybrid models by integrating components of existing frameworks.	Mar. 2025 – Present Sep. 2023 – Apr. 2025 Jul. 2021 – Oct. 2021
Publications	Genetic Encoding and Shared Knowledge in Reinforcement Learning with Structured Memory T. Djavaherpour, A. Naqvi, R. Norouziani, Q. Veher, S. Kelly. <i>Artificial Life Integrating Neuroplasticity into Genetic Programming Agents for Adaptive Decision Making</i> A. Naqvi, T. Djavaherpour, Q. Veher, S. Kelly. <i>Artificial Life</i> MAPLE: Multi-Action Programs through Linear Evolution for Continuous Multi-Action Reinforcement Learning Q. Vacher, S. Kelly, A. Naqvi, N. Beuve, T. Djavaherpour, M. Dardaillon, K. Desnos. <i>The Genetic and Evolutionary Computation Conference (GECCO)</i> Evolving Many-Model Agents with Vector and Matrix Operations in Tangled Program Graphs T. Djavaherpour, A. Naqvi, E. Zhuang, S. Kelly, <i>Genetic Programming Theory & Practice XXI</i> Tangled Program Graphs with Indexed Memory in Control Tasks with Short Time Dependencies T. Djavaherpour, A. Naqvi, S. Kelly, 16 th International Conference on Evolutionary Computation Theory and Applications (ECTA). Investigation of Sadness on Brain Mathematical Ability Using Musical and Semantical Excitation A. Davoodi Moghadam, A. Jamali, T. Djavaherpour, B. Taghibeyglou, 8 th Conference of Basic and Clinical Neuroscience Congress, Razi Hall, Tehran, Iran.	
Presentations	Genetic Encoding and Shared Knowledge in Reinforcement Learning with Structured Memory	2025

	Paper Poster Presentation, Artificial Life 2025, Kyoto, Japan.	
	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	Software Design, ANN: An image classification system using an ANN trained on the CIFAR-10 dataset, with comprehensive testing, automation, and detailed software documentation Link to GitHub	May 2024
	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	
	Software Design IV - Capstone Design Project (SFWRENG 4G06 A)	Fall 2025, Winter 2026
	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	
	RL/simulation tools OpenAI Gym, Mujoco	
	toolkits Scikit-learn, Gymnasium, PyTorch, Pandas, Keras, 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
	3rd 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
	3rd Place in Deep Learning Implementation Workshop Project at Amirkabir University	2019
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	