

Hafez Ghaemi

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Last updated: June 13, 2024

Research interests: Self-supervised learning - reinforcement learning - embodied AI

Education

Ph.D. | Computer Science Aug. 2023 – Present
Mila Quebec - University of Montreal,
GPA: 4.13/4.3 Montreal, QC, Canada

- Advisors: [Eilif Muller, Ph.D.](#), [Shahab Bakhtiari, Ph.D.](#)

M.Sc. | Computer Engineering, AI and Robotics Sep. 2020 – August 2023
University of Tehran,
GPA: 18.0/20.0, North American: 3.72/4.0 Tehran, Iran

- Thesis: Cumulative Prospect Theory in Multi-Agent Reinforcement Learning and Markov Games
([paper](#)) ([code](#))
Advisors: [Hamed Kebriyai, Ph.D.](#), [Majid Nili, Ph.D.](#)

M.Sc. | Data Science and Engineering (Program taught in English) Sep. 2020 – July 2022
Politecnico di Torino,
GPA: 26.3/30.0 (103/110), North American: 3.7/4.0 Turin, Italy

- Thesis: Decentralized Value-Based Reinforcement Learning in Stochastic Potential Games ([link](#)) ([code](#))
Advisors: [Fabio Fagnani, Ph.D.](#), [Giacomo Como, Ph.D.](#)

B.Sc. | Major: Mechanical Engineering, Minor: Computer Engineering Sep. 2016 – Sep. 2020
University of Tehran,
Overall GPA: 16.24/20.0 (3.35/4.0), Major: 16.24 (3.3), Minor: 16.26 (3.4) Tehran, Iran

- Thesis: Design and Implementation of a Smart Camera Slider Controller Using Deep Reinforcement Learning
Advisor: [Masoud Shariat Panahi, Ph.D.](#)

Publications

- Hafez Ghaemi, Hamed Kebriyai, Alireza Ramezani Moghaddam, and Majid Nili Ahamdabadi. "Risk-Sensitive Multi-Agent Reinforcement Learning in Network Aggregative Markov Games", Proceedings of the 23rd International Conference on Autonomous Agents and Multiagent Systems, 2024. ([link](#)), ([preprint](#)), ([poster](#)) ([code](#))
- Mahbod Nouri*, Faraz Moradi*, Hafez Ghaemi*, Ali Motie Nasrabadi, "Towards real-world BCI: CCSPNet, a compact subject-independent motor imagery framework", Digital Signal Processing, 2023. *: equal contribution. ([link](#)), ([preprint](#)), ([code](#))
- Hafez Ghaemi*, Erfan Mirzaei*, and Mahbod Nouri*, "BioLCNet: Reward-modulated Locally Connected Spiking Neural Networks", International Conference on Machine Learning, Optimization, and Data Science, 2022. *: equal contribution. ([link](#)), ([preprint](#)) ([code](#))

Preprints

- Hafez Ghaemi, Shirin Jamshidi, Mohammad Mashreghi, Majid Nili Ahmadabadi, and Hamed Kebriaei, "Risk Sensitivity in Markov Games and Multi-Agent Reinforcement Learning: A Systematic Review", arXiv:2406.06041, 2024. ([link](#))
- Aurora Saibene, Hafez Ghaemi, and Eda Dagdevir, "Deep Learning in Motor Imagery Eeg Signal Decoding: A Systematic Review", Available at SSRN 4592138, 2023. ([link](#))

Experience

Research Assistant Architectures of Biological Learning Lab (ABL), University of Montreal	August 2023 – Present Montreal, Canada
<ul style="list-style-type: none">• Located at CHU Sainte-Justine Research Center• Principal investigator: Elif Muller, Ph.D.	
Research Assistant Systems Neuroscience and AI Lab (SNAIL), University of Montreal	August 2023 – Present Montreal, Canada
<ul style="list-style-type: none">• Principal investigator: Shahab Bakhtiari, Ph.D.	
Teaching Assistant NeuroAI and Computational Neuroscience Courses, Neuromatch Academy	Recurrent contracts since July 2023 Remote
Graduate Teaching Assistant School of ECE, University of Tehran	February 2023 – July 2023 Tehran, Iran
<ul style="list-style-type: none">• Neural Networks Course, instructor: Ahmad Kalhor, Ph.D.• Game Theory Course, instructor: Hamed Kebriaei, Ph.D.	
Research Assistant Cognitive Systems Lab, and Smart Networks Lab, School of ECE, University of Tehran	October 2022 – August 2023 Tehran, Iran
<ul style="list-style-type: none">• Principal investigators: Hamed Kebriaei, Ph.D., Majid Nili, Ph.D.	
Undergraduate Research Assistant Artificial Intelligence in Mechanical Engineering Lab, University of Tehran	November 2019 – August 2020 Tehran, Iran
<ul style="list-style-type: none">• Member of the project team developing a mobile application that monitors human neck posture using front camera input and head pose estimation.• Principal investigator: Masoud Shariat Panahi, Ph.D.	
Summer Intern Biorobotics Lab, School of Mechanical Engineering, University of Tehran	July 2019 – September 2019 Tehran, Iran
<ul style="list-style-type: none">• Programming educational robots, design of dynamic mechanisms using CAD	
Undergraduate Teaching Assistant Materials Science Course, School of Mechanical Engineering, University of Tehran	September 2019 – January 2020 Tehran, Iran
<ul style="list-style-type: none">• Lecturing, solving extra problems, grading homework• Instructor: Ghader Faraji, Ph.D.	

Skills

Languages: English (fluent), Persian (native), French (intermediate), Italian (basic), Arabic (basic)
Programming (ordered by decreasing proficiency): Python, MATLAB, C/C++, Java, SQL, MongoDB, Julia, R
Deep learning frameworks (ordered by decreasing proficiency): PyTorch, Keras/TensorFlow, JAX
Miscellaneous: HPC, Git, microcontroller programming

Awards and Honors

Ranked 10 in the 25th Iranian Scientific Olympiad for University Students in Computer Engineering	Feb. 2021
TOPoliTo Scholarship Awarded to Politecnico di Torino's top international students	Oct. 2020 - Sep. 2022
Iran's National Elites Foundation Membership Awarded for excellent performance in the Iranian University Entrance Exam	Sep. 2016