Hafez Ghaemi [iD]

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

Education

Ph.D.. | Computer Science	Aug. 2023 – Present
Mila Quebec - University of Montreal,	
Current GPA: 4.3/4.0	Montreal, 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 Kebriaei, 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 Kebriaei, 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	August 2023 – Present
Architectures of Biological Learning Lab (ABL), University of Montreal	Montreal, Canada

- Located at CHU Sainte-Justine Research Center
- Principal investigator: Eilif Muller, Ph.D.

Research Assistant	August 2023 – Present
Systems Neuroscience and AI Lab (SNAIL), University of Montreal	Montreal, Canada

- Principal investigator: Shahab Bakhtiari, Ph.D.

Teaching Assistant	Recurrent contracts since July 2023
NeuroAI and Computational Neuroscience Courses, Neuromatch Academy	Remote

Graduate Teaching Assistant	February 2023 – July 2023
School of ECE, University of Tehran	Tehran, Iran

- Neural Networks Course, instructor: Ahmad Kalhor, Ph.D.
- Game Theory Course, instructor: Hamed Kebriaei, Ph.D.

Research Assistant	October 2022 – August 2023
Cognitive Systems Lab, and Smart Networks Lab, School of ECE, University of Tehran	Tehran, Iran

- Principal investigators: Hamed Kebriaei, Ph.D., Majid Nili, Ph.D.

Undergraduate Research Assistant	November 2019 – August 2020
Artificial Intelligence in Mechanical Engineering Lab, University of Tehran	Tehran, Iran

- 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	July 2019 – September 2019
Biorobotics Lab, School of Mechanical Engineering, University of Tehran	Tehran, Iran

- Programming educational robots, design of dynamic mechanisms using CAD

Undergraduate Teaching Assistant	September 2019 – January 2020
Materials Science Course, School of Mechanical Engineering, University of Tehran	Tehran, Iran

- 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	Oct. 2020 - Sep. 2022
Awarded to Politecnico di Torino's top international students	

Iran's National Elites Foundation Membership	Sep. 2016
Awarded for excellent performance in the Iranian University Entrance Exam	