# Hafez Ghaemi iD

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Areas of interest: Self-supervised learning - deep learning - reinforcement learning - theoretical neuroscience - embodied AI

## Education

**Ph.D. | Computer Science**                                        Aug. 2023 – Present
Mila Quebec - University of Montreal                                  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
  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)
  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*, Erfan Mirzaei*, and Mahbod Nouri*, BioLCNet: Reward-modulated Locally Connected Spiking Neural Networks. Machine Learning, Optimization, and Data Science: 8th International Workshop, LOD 2022, Certosa di Pontignano, Italy, September 19–22, 2022, Revised Selected Papers, Part II. Cham: Springer Nature Switzerland, 2023. *: equal contribution. (DOI), (preprint) (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, 2022, 103816, ISSN 1051-2004. *: equal contribution. (DOI), (preprint), (code)

## Preprints

- Aurora Saibene, Hafez Ghaemi, and Eda Dagdevir. "Deep Learning in Motor Imagery Eeg Signal Decoding: A Systematic Review." Available at SSRN 4592138. (DOI), (preprint)

## 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
July 2023
Computational Neuroscience Course, Neuromatch Academy, Certificate

### 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++, SQL, MongoDB, Julia, R, Java
Machine learning frameworks: PyTorch, Keras, Scikit-Learn, Tensorflow
Miscellaneous: Linux, Git, Raspberry Pie, Arduino, Simulink, SolidWorks

## 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