

HAFEZ GHAEMI

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hafezgh.github.io



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Areas of interest: Self-supervised learning - neural networks - theoretical neuroscience - reinforcement learning

EDUCATION

Ph.D. | Computer Science Aug. 2023 – Aug 2027
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 – July 2023
University of Tehran,

Current GPA (20/32 Credits): 18.8/20.0, North American: 3.85/4.0 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 ([code](#))
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](#)), ([arXiv](#)) ([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](#)), ([arXiv](#)), ([code](#))

CONFERENCES

- The 8th International Conference on Machine Learning, Optimization, and Data Science, September 2022, Siena, Italy ([link](#)).
- The 2nd Advanced Course and Symposium on Artificial Intelligence and Neuroscience, September 2022, Siena, Italy ([link](#)).

EXPERIENCE

- 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 – Present
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), Italian (basic), Arabic (basic)
Programming (ordered by decreasing proficiency): Python, MATLAB, C/C++, SQL, MongoDB, Julia, R, Java
Machine learning frameworks (ordered by decreasing proficiency): PyTorch, Scikit-Learn, Keras, Tensorflow
Miscellaneous: Linux, Git, Raspberry Pie, Arduino, Simulink, SolidWorks

AWARDS

- Ranked 10 in the 25th Iranian Scientific Olympiad for University Students in Computer Engineering** Feb. 2021
[news](#)
- 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

CERTIFICATES

- Graduate Record Examinations (GRE): Q: 170, V: 162, W: 4.00 ([link](#))** November 2019
Educational Testing Service (ETS)
- IELTS Academic: R: 9.0, L: 8.0, W: 7.0, S: 7.0 ([link](#))** October 2021
International English Language Testing System

RELEVANT COURSES

- Machine Learning and Deep Learning (Grad): 4/4
- Mathematics in Machine Learning (Grad): 4/4
- Network Dynamics and Learning (Grad): 4/4
- Reinforcement Learning (Grad): 4/4
- Introduction to Cognitive Science (Grad): 4/4
- Deep Natural Language Processing (Grad): 4/4
- Big Data (Grad): 4/4
- Computational Linear Algebra (Grad): 4/4

- Game Theory (Grad): 4/4
- Information Theory (Grad): 3/4
- Artificial Intelligence (Undergrad): 4/4
- Advance Programming (Undergrad): 4/4
- Architecture (Undergrad): 4/4
- Distributed Optimization and Learning (Grad): 4/4
- Numerical Computation (Undergraduate): 4/4
- Engineering Mathematics (Undergrad): 4/4
- Calculus 1 (undergrad): 4/4
- Computational Neuroscience (Grad): Audit

SELECTED ACADEMIC PROJECTS

Distributed Cooperative Multi-Agent Reinforcement-Learning in Markov Games (code) <i>Python</i>	Fall 2022
Distributed Learning and Optimization Course, University of Tehran	
Gossip Training for Image Classification with Deep Learning (code) <i>Python</i>	Fall 2022
Distributed Learning and Optimization Course, University of Tehran	
Federated Deep Learning for Image Classification (code) <i>Python</i>	Fall 2022
Distributed Learning and Optimization Course, University of Tehran	
Auditory Attention Task EEG Signal Classifier (code) <i>Python</i>	Spring 2022
Fifth BCI Competition of Iranian National Brain Mapping Laboratory (NBML)	
Fine-tuning BERT for Multi-lingual Hate Speech Detection and Text Classification (code) <i>Python</i>	Fall 2021
Deep Natural Language Processing Course, Politecnico di Torino	
A Hybrid Rule-based/Q-learning Hanabi Agent (code) <i>Python</i>	Fall 2021
Computational Intelligence Course, Politecnico di Torino	
Problems on Flow Optimization, Markov Chains, and Epidemic Models (code) <i>Python</i>	Fall 2021
Network Dynamics and Learning Course, Politecnico di Torino	
Music Genre Classification using CRNN and Transfer Learning (code) <i>PyTorch</i>	Spring 2021
Machine Learning and Deep Learning Course, Politecnico di Torino	
Comparison of ML methods for Facial and Emotional Recognition on JAFFE dataset (code) <i>Python</i>	Spring 2021
Mathematics in Machine Learning Course, Politecnico di Torino	
Applications of Krylov methods, PCA, and SVD in real-world problems (code) <i>Python</i>	Spring 2021
Computational Linear Algebra Course, Politecnico di Torino	
Stock Portfolio Management Using Deep Q-Learning (code) <i>PyTorch</i>	Fall 2020
Reinforcement Learning Course, University of Tehran	

PERSONAL INTERESTS

Podcasts, traveling, classic novels, psychological thrillers and hard sci-fis, philosophy, chess