Hafez Ghaemi

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Areas of interest: Multi-agent learning - brain-inspired learning - reinforcement learning - game theory - computational neuroscience

Education

M.Sc. | ***Computer Engineering, AI and Robotics*** Sep. 2020 – July 2023
University of Tehran,
Current GPA: 18.5/20.0, North American: 3.75/4.0 Tehran, Iran

- **Thesis**: Risk Sensitivity and Cumulative Prospect Theory for Multi-Agent Reinforcement Learning in 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

In Press

- Mahbod Nouri, Faraz Moradi, **Hafez Ghaemi**, and Ali Motie Nasrabadi. "Towards Real-World BCI: CCSPNet, A Compact Subject-Independent Motor Imagery Framework." Digital Signal Processing (2022). arXiv (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. Springer, Cham, 2022. 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

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), Arabic (basic), Italian (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
Other soft and hard skills: Linux, Git, Raspberry Pie, Arduino, Simulink, SolidWorks

Certificates

Reinforcement Learning Specialization (link) October 2021
Coursera, University of Alberta & Alberta Machine Intelligence Institute

Deep Learning Specialization (link) May 2021
Coursera

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

Selected Academic Projects

Auditory Attention Task EEG Signal Classifier (code) | ***Python*** 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) | ***Python*** Fall 2021
Deep Natural Language Processing Course, Politecnico di Torino

A Hybrid Rule-based/Q-learning Hanabi Agent (code) | ***Python*** Fall 2021
Computational Intelligence Course, Politecnico di Torino

Problems on Flow Optimization, Markov Chains, and Epidemic Models (code) | ***Python*** Fall 2021
Network Dynamics and Learning Course, Politecnico di Torino

Music Genre Classification using CRNN and Transfer Learning (code) | ***PyTorch*** Spring 2021
Machine Learning and Deep Learning Course, Politecnico di Torino

Comparison of ML methods for Facial and Emotional Recognition on JAFFE dataset (code) | ***Python*** Spring 2021
Mathematics in Machine Learning Course, Politecnico di Torino

Stock Portfolio Management Using Deep Q-Learning (code) | ***PyTorch*** Spring 2020
Interactive Learning Course (Audit), University of Tehran

Applications of Krylov methods, PCA, and SVD in real-world problems (code) | ***Python*** Fall 2021
Computational Linear Algebra Course, Politecnico di Torino

Waterfilling Power Allocation and LZSS Lossless Compression (code) | ***MATLAB*** Fall 2021
Information Theory Course, Politecnico di Torino

Object-oriented Design and Implementation of a Basic E-commerce Website (code) | ***C++*** Fall 2019
Advanced Programming Course, University of Tehran

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

RELEVANT COURSES

- Machine Learning and Deep Learning (Graduate): 4/4
- Mathematics in Machine Learning (Graduate): 4/4
- Network Dynamics and Learning (Graduate): 4/4
- Reinforcement Learning (Graduate): 4/4
- Introduction to Cognitive Science (Graduate): 4/4
- Deep Natural Language Processing (Graduate): 4/4
- Big Data (Graduate): 4/4
- Computational Linear Algebra (Graduate): 4/4
- Game Theory (Graduate): 4/4
- Information Theory (Graduate): 3/4
- Artificial Intelligence (Undergraduate): 4/4
- Advance Programming (Undergraduate): 4/4
- Optimization of Mechanical Systems (Undergraduate): 4/4
- Numerical Computation (Undergraduate): 4/4
- Engineering Mathematics (Undergraduate): 4/4
- Computational Neuroscience (Graduate): Audit

PERSONAL INTERESTS

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