Fatemeh Lotfi

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Research Interests Distributed Learning, Decentralized Decision Making in Multi-Agent Systems, Machine Learning, Deep Reinforcement Learning (DRL), Wireless Communication Systems, Internet of Things (IoT), 5G/6G Networks, Signal Processing

Education

Ph.D., Clemson University, Clemson, SC, USA   Aug. 2022 - Present

Electrical Engineering, Wireless Communication Systems.
- Dissertation: *Decentralized Decision Making in Multi-Agent Wireless Communication Systems.*
- Advisor: Prof. Fatemeh Afghah.

Unfinished Ph.D., University of Colorado Colorado Springs (transferred to Clemson University), Colorado Springs, CO, USA   Jan. 2021 - Aug 2022

Electrical Engineering, Wireless Communication Systems.
- Dissertation: *Decentralized Multi-Agent smart Systems.*
- Advisor: Prof. Omid Semiari.

M. Sc., University of Tehran, Tehran, Iran   Sep. 2010 - Jun 2013

Electrical Engineering, Communication System.
- Thesis: *Efficient Selection of the Best Relay in Dual-Hop Opportunistic Relaying.*
- Advisor: Prof. Amir Masoud Rabiei.

B. Sc., Iran University of Science and Technology, Tehran, Iran   Sep. 2005 - Jun 2009

Electrical Engineering, Communication System.
- Thesis: *Performance Analysis of N-MSK Modulation in OFDM Systems.*
- Advisor: Prof. Vahid Tabataba Vakili.

Publications

1. A. Shamsoshoara, **F. Lotfi**, S. Mousavi, F. Afghah, and İ. Güvenç, "Joint Path planning and Power Allocation of a Cellular-Connected UAV using Apprenticeship Learning via Deep Inverse Reinforcement Learning", submitted to *Elsevier Computer Networks Journal*, 2023. (under peer-reviewing process)

2. **F. Lotfi**, M. Gharib, and F. Afghah, "Open RAN LSTM Traffic Prediction and Slice Management using Deep Reinforcement Learning", *Asilomar Conference on Signals, Systems, and Computers*, Pacific Grove, CA, 2023.

3. **F. Lotfi**, F. Afghah, J. Ashdown, "Attention-based Open RAN Slice Management using Deep Reinforcement Learning", *IEEE Global Communications Conference (GLOBECOM)*, Kuala Lumpur, Malaysia, 2023.

4. H. Rajoli, **F. Lotfi**, A. Atyabi, and F. Afghah, "Triplet Loss-less Center Loss Sampling Strategies in Facial Expression Recognition Scenarios." *Conference on Information Science and Systems (CISS)* , Baltimore, Maryland, March 2023.

5. **F. Lotfi**, O. Semiari, and F. Afghah, "Evolutionary Deep Reinforcement Learning for Dynamic Slicing Management in O-RAN", *IEEE Global Communications Workshop Conference (GLOBECOM)*, Rio de Janeiro, Brazil, December 2022.

6. **F. Lotfi**, O. Semiari, and W. Saad, "Semantic-Aware Collaborative Deep Reinforcement Learning Over Wireless Cellular Networks", *IEEE International Conference on Communications (ICC)*, Seoul, South Korea, May 2022.

7. **F. Lotfi** and O. Semiari, "Performance Analysis and Optimization of Uplink Cellular Networks with Flexible Frame Structure", *IEEE 93rd Vehicular Technology Conference (VTC2021-Spring)*, April 2021.

Work Experience	• Graduate Research Assistant, Clemson University, USA	Aug. 2022 - Present

- Conduct research on the intersection of the next-generation wireless communication systems and AI.
- Develop algorithms with open-source modules of Python to improve the performance of wireless communication systems.
- To evaluate the algorithm on the testbeds with real emulation.
- Study 3GPP standards to ensure that the work aligns with industry best practices.
- Present and publish the findings.

• Graduate Research Assistant, University of Colorado (UCCS), USA   Jan. 2021 - Aug. 2022

- Engage in advanced research focusing on the future of wireless communications and artificial intelligence.
- Create algorithms utilizing Python's open-source modules to enhance the performance of wireless communication systems.
- Thoroughly examine 3GPP standards to ensure compliance with industry-leading practices.
- Deliver presentations and publish research findings to disseminate knowledge.

• Research And Development Engineer in Sepehr Co., Tehran, Iran   Sep 2013 - Sep 2020

- Developing IoT-based smart systems for intelligent healthcare monitoring.
- Developing new algorithms, such as:
  * noise cancellation and equalizer designs.
  * utilizing Kalman filter design for signal parameter estimation.
  * designing algorithms for Optical Character Recognition (OCR).
  * analyzing phase and amplitude calibration methods
- Collaborate to implement innovative solutions based on research findings.

• Researcher in Wireless Networks Lab, University of Tehran, Tehran, Iran   Summer 2011

Investigating methods for network coverage and QoS of WiMax systems.

Contributed Grant Projects

1. FA9550-20-1-0090, Air Force Office of Scientific Research (AFSOR), " Dynamic Data-Driven Decision Making, and Communications in Autonomous Unmanned Aerial Vehicle Networks for Disaster Management", PI F. Afghah, $450 K.
Role: Research Assistant.

2. CNS 2204445, "Collaborative Research: CPS: Medium: Wildland Fire Observation, Management, and Evacuation using Intelligent Collaborative Flying and Ground Systems", PI F. Afghah, $1.2 M, 05/21-03/24.
Role: Research Assistant.

3. CNS 2232048, "CAREER: Toward Autonomous Decision Making and Coordination in Intelligent Unmanned Aerial Vehicles' Operation in Dynamic Uncertain Remote Areas", PI F. Afghah, $541.949 K, 08/22-07/25.
Role: Research Assistant.

4. CNS 1941348, "CRII: NeTS: Toward Joint Mobile Broadband and Ultra-Reliable Low-Latency Communications for Connected Autonomous Vehicles", PI O. Semiari, $197.511 K, 08/19-04/21.
Role: Research Assistant.

5. CNS 2008646, "Collaborative Research: CNS Core: Small: Extended Reality over Wireless Cellular Networks: Quality-of-Experience Analysis and Optimization", PI O. Semiari, $270 K, 10/20-09/23.
Role: Research Assistant.

Honours and Awards

• Ranked top %1, in the Nationwide University of Iran Entrance Exam for M.Sc. 2010.

• Ranked top %1, in the Nationwide University of Iran Entrance Exam for B.Sc. 2005.

Computer Skills	Programming:	Python, MATLAB, C/C++, C#
	Machine Learning:	Pytorch, Tensorflow, Keras, Scikit-Learn, Pandas, NumPy
	Other Skills and Technologies:	GitHub, Jupyter, Docker, Matplotlib, LaTeX

Selected Graduate Courses

Machine Learning, Deep Learning in Computer Vision, Advanced Digital Communications, Digital Signal Processing (DSP), Cellular Communication Systems, Engineering Probability and Statistics, Adaptive Filters, Coding Theory.

Language Skills

Persian: Native
English: Fluent
Arabic: Familiar