Amirmehdi Jafari Fesharaki

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Scholar Amirmehdi Jafari Fesharaki

Education

Master of Science | ***Electrical Engineering - Machine Learning, Communications, Security*** 2024 – Ongoing
Institut Polytechnique de Paris

Bachelor of Science | ***Electrical Engineering*** 2019 – 2023
Sharif University of Technology GPA: 19.02/20

Research Experience

R&D Engineer Aug. 2022 – Aug. 2024
Open 5G Lab
- Responsible for the deployment and maintenance of a Cloud-Native 5G core network
- Implemented QoS provisioning and enabled VoLTE support for non-VoLTE-enabled users within the LTE core
- Designed and developed a Non-3GPP Inter-Working Function (N3IWF) solution for 5G networks

Research Intern Aug. 2022 – Oct. 2023
Max Planck Institute for Intelligent Systems
- Development of a hybrid deferral system, which incorporates human supervision into the final prediction process. This innovative approach transcends traditional reliance solely on human decision-makers on deferral, with the goal of enhancing the accuracy and performance of deferral systems
  Under the supervision of Dr. Samira Samadi

Research Intern Mar. 2022 – Dec. 2022
Technische Universität Berlin
- Development and analysis of an algorithm for a variation of the classical online caching problem where nodes should respect dependency relationships while hosted in the cache
  Under the supervision of Prof. Stefan Schmid

Research Assistant Apr. 2021 – Dec. 2022
Sharif University of Technology
- Establishment of a Software Defined Wide Area Network (SD-WAN) Laboratory through the utilization of ONOS, OVS (Open vSwitch), and Mininet technologies
  Under the supervision of Prof. Babak Khalaj

Teaching Experience

Teaching Assistant Feb. 2021 – June 2023
Sharif University of Technology
- Introduction to Machine Learning - *Spring 2023*
- Software Defined Mobile Networks (MSc) - *Spring 2023*
- Data Communication Networks (MSc) - *Fall 2023*
- Deep Learning (MSc) - *Spring 2022*
- Digital Signal Processing - *Spring 2022*
- Electromagnetics - *Spring 2021*

International Young Physicists' Tournament (IYPT) Team Leader and Mentor Mar. 2020 – June 2022
Ariaian Young Innovative Minds Institute, AYIMI

Honors and Awards

Ranked **Top 5%** Among Electrical Engineering Departmant Students

Bronze Medal in 32nd International Young Physicists' Tournament (2019)

Gold Medal in 31th Iranian National Physics Olympiad (2018)

PUBLICATIONS

Defer-and-Fusion: Optimal Predictors that Incorporate Human Decisions — ICLR 2024 Workshop
MA. Charusaie, A.J. Fesharaki, and S. Samadi — Paper

Dependency-Aware Online Caching — IEEE INFOCOM 2024
J. Dallot, A.J. Fesharaki, M. Pacut, and S. Schmid — Paper

COURSE PROJECTS

Digital Communications | ***Matlab*** — Fall 2022
Simulation and investigation of the performance of various digital communication systems with different coding, modulations, and channel noise levels — Github

Digital Image Processing (MSc) | ***Python*** — Summer 2022
Implementation of various Digital Image Processing algorithms including image enhancement and filtering, coding and compression, detection and segmentation, etc. — Github

Data Communication Networks (MSc) | ***Python*** — Summer 2022
Simulation of a real-time simplified LTE system including User, eNodeB, SGW and MME using multi-threading and socket programming. — Github

Communication Systems | ***Matlab*** — Fall 2021
Simulation of a Digital Communication System including the analysis of PAM, PSK and FSK modulations in the presence of noises, and the statistical analysis of Huffman Source Coding — Github

An Introduction to Machine Learning | ***Python*** — Fall 2021
Intelligent Typing System using EEG signals by predicting whether the character the person is looking at is their desired character or not — Github

Signals and Systems | ***Python*** — Summer 2021
Designing a system which plays a song by getting the image of its sheet as the input — Github

SELECTED COURSES

Graph Signal Processing (MSc): 17.8/20

Deep Learning for Computer Vision: Audited

Digital Image Processing (MSc): 19.3/20

Data Communication Networks (MSc): 20/20

Software-Defined Mobile Networks (MSc): 18.5/20

Convex Optimization 1: 19.8/20

Communication Systems: 20/20

Digital Signal Processing: 19.9/20

An Introduction to Machine Learning: 19.7/20

Mathematical Methods in Engineering (Linear Algebra): 19.8/20

SKILLS

Programming Languages: Python, MATLAB, Java, C, MIPS, 8051 Microcontroller

Tools/Frameworks: CVXPY, PyTorch, NumPy, Pandas, Matplotlib, OpenCV, Git, Simulink, COMSOL, Proteus

Network Tools/Frameworks: Kubernetes, Docker, OpenVSwitch, Mininet, OpenDaylight, ONOS, NS3, GNS3, Wireshark

Operating Systems: Linux, Windows, MacOs

Document Creation: LaTeX, Microsoft Office, Markdown