Iman Rahmati

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Research Interests: Distributed Systems, Mobile Edge Computing (MEC), Multi-Agent Deep Reinforcement Learning (DRL), Federated/Distributed Learning, Performance Evaluation

EDUCATION

MSc. Computer Engineering/Networking Sharif University of Technology (SUT)
Graduated Sep 2022, 4/4 GPA
Thesis Title: A decentralized resource allocation algorithm utilizing DRL for MEC, aimed at optimizing latency and energy efficiency.
Supervisor: Prof. Ali Movaghar

BSc. Industrial Engineering Khajeh Nasir Toosi University of Technology (KNTU)
Graduated Sep 2019

ACADEMIC EXPERIENCE

Research Engineer at EdgeAI Lab 2022-Present
Supervisor: Prof. Hamed Shah-Mansouri Department of Electrical Engineering, SUT
- **Research Theme:** Developing hierarchical multi-agent DRL-based approaches for computation offloading decision-making in heterogeneous MEC, with an emphasis on centralized training and decentralized execution to achieve collaborative global optimization.

Research Assistant at Performance and Dependability Lab (PDL) 2019-2022
Supervisor: Prof. Ali Movaghar Department of Computer Science and Engineering, SUT
- **Research Theme:** Developing DRL-based algorithms to optimize computation offloading decisions in MEC, with a primary focus on enhancing the quality of experience (QoE) for end-users of mobile applications.

Teaching Assistant
- **Performance Evaluation of Computer Systems** (Head TA) SUT, 2020-2022
  Prof. Ali Movaghar and Dr. Mahdi Dolati
- **Software Defined Networking** (Head TA) SUT, 2022
  Prof. Ali Movaghar and Dr. Mohammad Hosseini
- **Verification of Reactive Systems** SUT, 2021
  Prof. Ali Movaghar
- **Theory of Machines and Languages** (Head TA) SUT, 2021
  Prof. Ali Movaghar
- **Wireless Networking** SUT, 2021
  Prof. Ali Mohammad Afshin Hemmatyar

Sub-Reviewer at 27th International Computer Conference CSICC, 2022
Computer Society of Iran (CSICC)
IEEE website published papers from this conference.

PUBLICATION

- I. Rahmati, H. Shah-Mansouri, A. Movaghar, "QECO: A QoE-Oriented Computation Offloading Algorithm based on Deep Reinforcement Learning for Mobile Edge Computing", Accepted in IEEE Transactions on Network Science and Engineering, 2024.
- I. Rahmati, H. Shah-Mansouri, H. Kebriaei, A. Movaghar, "Multi-Agent Deep Reinforcement Learning for Energy-Efficient Cooperative Computation Offloading in Heterogeneous Mobile Edge Computing," work in progress.
- I. Rahmati, A. Movaghar, "Federated Deep Reinforcement Learning Improves Dependent Task Offloading in Mobile Edge Computing", work in progress.
- M. Saberi, M. Dolati, I. Rahmati, A. Movaghar, T. Dargahi, A. Khonsari, "DRL-Based Collaborative Rule Caching Through Pairing of P4 Switches in SDNs", work in progress.

HONORS

- ❖ Ranked in the top 10% of M.Sc. students in the Department of Computer Engineering at SUT, Class of 2019 — 2022
- ❖ Ranked 55^{th} among 60,000 participants in the Nationwide University Entrance Exam of Computer Engineering for M.Sc. in the field of Networking — 2019
- ❖ Ranked Top 1% among 180,000 participants in the Nationwide University Entrance Exam for B.Sc. in the field of Mathematics and Physics — 2014
- ❖ Achieving the 3^{th} position in the RoboCup Competition (IranOpen) — 2012

ACADEMIC PROJECTS

- **Multi-Agent Deep Deterministic Policy Gradiant Networks** — EdgeAI, 2023
  Designed based on decentralized partially observable markov decision processes (Dec-POMDP) and employed for computation offloading in heterogeneous MEC.
- **Dueling Double Deep Q-Networks (D3QN)** — PDL, 2022
  Designed based on markov decision processes and employed for distributed computation offloading decision-making.
- **Mobile Edge Computing Environment** — PDL, 2021
  Modeled and simulated resource-constrained MEC for latency and energy optimization.
- **Long Short Term Memory** — PDL, 2021
  Designed and modeled for forecasting edge servers' workload based on time series analysis.
- **Queueing System** — SUT, 2020
  Discrete event simulation and performance evaluation of M/M/1/K queues with various service disciplines.

SELECTED COURSES

- Theory of Distributed Systems	4/4	- Wireless Networking	4/4
- Computer Performance Evaluation	4/4	- Computer Network	4/4
- Verification of Reactive Systems	4/4	- IT Enterprise architecture	4/4
- Advanced Network Security	4/4	- Computer Network Management	3.9/4

SKILLS

- **General:** Networking, MEC, Multi-Agent DRL, Simulation, Performance Evaluation
- **Programming Languages:** Python, R, Bash, C++
- **Machine Learning:** TensorFlow, PyTorch, Scikit-learn
- **Data Analysis:** Pandas, NumPy, Matplotlib
- **Frameworks & Tools:** Linux, Mininet, Ns-3, Git, LaTeX, Vim, Flask, Visio
- **Language Proficiency:** Farsi (Native), English (Working proficiency)
  - TOEFL (IBT) Score: 108/120 (R: 30, L: 28, S: 22, W: 28)

CERTIFICATION

Interactive Learning Tehran Institute for Advanced Studies (TeIAS), 2021
Certification of Completion in Deep Reinforcement Learning Course, Inst: Prof. Majid Nili
Machine Learning and Deep Learning in Python Start-Tech Academy, 2020
Certification of Completion in Udemy Online Course
Data Science Tose'e Higher Education Institute, 2019
Certification of Completion in Data Science Course, Inst: Dr. Yaser Zerehsaz
Advanced Python Topics Remis Arjang Institute, 2018
Certification of Completion in Advanced Python Course, Inst: Dr. Peyman Hooshmandi
LPIC1 Anisa Iran Linux House, 2017
Certification of Completion in Linux Administrator Course, Inst: Dr. Amir Abbasi

REFERENCES

Prof. Ali Movaghar movaghar@sharif.edu
Professor of Computer Science and Engineering Department, SUT
Visiting Professor of Computer Science Department, University of Michigan
Prof. Hamed Shah-Mansouri hamedsh@sharif.edu
Assistant Professor of Electrical Engineering Department, SUT
Prof. Ali Mohammad Afshin Hemmatyar hemmatyar@sharif.edu
Professor of Computer Science and Engineering Department, SUT

Further information are available upon request.