

Mehdi Bolourian

mbolourian@uwaterloo.ca
Google Scholar — GitHub — LinkedIn

Research Summary

I am a 3rd year Ph.D. student leveraging optimization- and deep learning-based methods for orchestration of large-scale networked systems, including 5G/6G, mobile-edge/cloud, and quantum networks. My work focuses on non-convex optimization, reinforcement learning, and stochastic modeling to design scalable and resource-efficient control policies under uncertainty and cross-domain constraints.

Education

University of Waterloo (UW)

Ph.D. in Computer Science

Supervisor: Prof. Raouf Boutaba

CGPA: 91.8/100

Anticipated Graduation: 09/27

Waterloo, ON, Canada

Sep. 2023 – Present

Sharif University of Technology (SUT)

M.S. in Electrical Engineering

Supervisor: Dr. H. Shah-Mansouri

CGPA: 18.03/20

Thesis: Energy-aware Computation Offloading for Wireless Powered Mobile-Edge Computing Systems (A+)

Tehran, Iran

Sep. 2020 – Sep. 2022

Isfahan University of Technology (IUT)

B.S. in Computer Engineering

B.S. in Electrical Engineering (Double Major)

CGPA: 18.75/20

Isfahan, Iran

Sep. 2015 – Feb. 2020

Awards & Honors

- **David R. Cheriton Graduate Scholarship**, University of Waterloo, 2023.
- **Ranked 1st** among M.S. students in Digital Electronic Systems, Sharif University of Technology, 2021.
- MCI Research Grant for M.S. Thesis, Sharif University of Technology, 2022.
- **Ranked 1st** among undergraduate students in Electronics and Computer Hardware Engineering, Isfahan University of Technology, 2019.

Publications

- **M. Bolourian**, N. Limam, M. A. Salahuddin, R. Boutaba, “5Guard: Isolation-aware End-to-End Slicing of 5G Networks,” *IEEE Transactions on Mobile Computing (TMC)*, accepted, Oct. 2025.
- S. G. Park, Q. Zhang, R. Almeida Jr., **M. Bolourian**, M. Tornatore, R. Boutaba, “Resource Allocation for Satellite QKD Networks with Atmospheric Forecast,” *IEEE CNSM*, Bologna, Italy, 2025.
- **M. Bolourian**, H. Shah-Mansouri, “Deep Q-Learning for Minimum Task Drop in SWIPT-enabled Mobile-Edge Computing,” *IEEE Wireless Communications Letters*, vol. 13, no. 3, Mar. 2024.
- **M. Bolourian**, H. Shah-Mansouri, “Energy-Efficient Task Offloading for Wireless-Powered Mobile-Edge Computing,” *IEEE Internet of Things Journal*, vol. 9, no. 12, Jun. 2023.
- **M. Bolourian**, Q. Zhang, M. Tornatore, R. Boutaba, “StratoQ: Towards Adaptive Orchestration of QKD Networks with Stratospheric Balloons,” *ACM MobiCom 2026 (Under review)*.

Selected Professional Experiences

Toatech (Startup) - Accepted and active at Sharif Technology Park

Co-founder & CEO

Tehran, Iran

Mar. 2022 – Sep. 2023

- Designed and deployed a distributed edge-based control architecture for smart home appliances, offloading complex scheduling and optimization logic from resource-constrained MCUs to ARM-based edge servers.
- Developed AI-based control policies for temperature calibrations under noisy sensor feedback and delayed actuation.

Deno Electronic

Team Lead, Electronics Engineer

Tehran, Iran

Nov. 2020 – Sep. 2023

- Developed resource-efficient control and optimization algorithms in embedded C for RISC-based MCUs, enabling real-time temperature regulation under tight compute constraints.

Selected Projects

- **ONAP-based 5G Orchestration Testbed:** Co-deployed ONAP on a multi-node OpenStack and Kubernetes cluster to study orchestration and automation of 5G network services across local and cloud environments.
- **Data Center Remote Monitoring System:** Co-designed a distributed temperature monitoring and control system with heterogeneous end nodes, supporting remote sensing/actuation and over-the-air updates in an academic data center at IUT.

Technical Skills

Programming: Python, C/C++, CUDA, MATLAB

ML & AI: PyTorch, Deep Reinforcement Learning (DQN, PPO), Graph Attention Networks, Recurrent Neural Networks (LSTM, GRU)

Optimization: Gurobi, CVXPY, MATLAB, Convex/Non-Convex Optimization

Systems: Kubernetes, Docker

Volunteer and Teaching Activities

- **Technical Program Committee Member:** IEEE GLOBECOM 2025 & 2026, UWaterloo CPI's Graduate Student Conference 2025.
- **Reviewer:** IEEE TCOM, TSC, TIFS, NOMS, NoF.
- **Teaching Assistant:** Introduction to AI (UW), Operating Systems (UW), Convex Optimization (SUT).

Selected Certificates

- **Jodi Glickman on Pitching Yourself**, LinkedIn Learning, *Apr. '20*
- **Gretchen Rubin on Creating Great Workplace Habits**, LinkedIn Learning, *Nov. '17*
- **Bill George on Self Awareness, Authenticity, and Leadership**, LinkedIn Learning, *Sep. '17*

Selected Courses

- **CS686** - Intro to AI: Focuses on sequential decision-making under uncertainty, including probabilistic reasoning, Markov decision processes, and multi-agent decision models for interacting and competing agents.
- **CS846** - Software Engineering for Big Data and AI: Seminar course on scalable AI systems, covering large language models, data privacy, robustness and adversarial behavior in ML, and the impact of data and model scale on performance.
- **CS798** - Network Softwarization: Covers programmable and virtualized network infrastructures (OVS, P4, OpenStack, containers, orchestration) and their application to 5G, network slicing, and NFV-enabled systems.

Languages

English: Fluent (TOEFL iBT), can communicate and engage in complex technical discussions