# *Ali Mehrabian*

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## *Research Interests*

- Network Science
- Learning-based Algorithm Design for Optimization Problems
- Graph Signal Processing
- Graph Machine Learning
- Time-series Analysis and Forecasting

## *Education*

**The University of British Columbia (UBC)** *Vancouver, Canada*
*MASc in Electrical and Computer Engineering (GPA: 92/100)* *Sept. 2021 - Oct. 2023*
Thesis: Graph Neural Networks for Traffic Prediction and Resource Allocation in 6G Wireless Systems

**Sharif University of Technology (SUT)** *Tehran, Iran*
*BSc in Electrical Engineering (GPA: 17.62/20)* *Sept. 2017 - Aug. 2021*
Thesis: Network Monitoring and Estimating the Quality of Network Services

## *Publications*

- **Ali Mehrabian**, Ehsan Hoseinzade, Mahdi Mazloum, and Xiaohong Chen, "**Mamba Meets Financial Markets: A Graph-Mamba Approach for Stock Price Prediction**," *Submitted for Publication in IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, Hyderabad, India, Apr. 2024.
- **Ali Mehrabian**, Moein Heidari, Parsa Mojarad, Ilker Hacihaliloglu, "**Implicit Neural Representations with Fourier Kolmogorov-Arnold Networks**," *Submitted for Publication in IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, Hyderabad, India, Apr. 2024.
- **Ali Mehrabian** and Vincent W.S. Wong, "**Traffic Prediction in Wireless Cellular Networks: An Adaptive Graph-Mamba Approach**," *Submitted for Publication in IEEE Wireless Communications Letters.*
- **Ali Mehrabian** and Vincent W.S. Wong, "**Joint Spectrum, Precoding, and Phase Shifts Design for RIS-aided Multiuser MIMO THz Systems**," in *Proceedings of IEEE Transactions on Communications (TCOM)*, vol. 72, no. 8, pp. 5087–5101, Aug. 2024.
- **Ali Mehrabian** and Vincent W.S. Wong, "**Adaptive Bandwidth Allocation in Multiuser MIMO THz Systems with Graph-Transformer Networks**," in *Proceedings of IEEE International Conference on Communications (ICC)*, Denver, CO, Jun. 2024.
- **Ali Mehrabian**, Shahab Bahrami, and Vincent W.S. Wong, "**A Dynamic Bernstein Graph Recurrent Network for Wireless Cellular Traffic Prediction**," in *Proceedings of IEEE International Conference on Communications (ICC)*, Rome, Italy, May 2023.

## *Professional Experiences*

**The University of British Columbia (UBC)** *Vancouver, Canada*
*Reviewer* *Apr. 2024- Present*

- IEEE Open Journal of the Communications Society (OJ-COMS), IEEE Transactions on Vehicular Technology (TVT), IEEE Transactions on Cognitive Communications and Networking (TCCN), IEEE Communications Letter.

*Graduate Research Assistant (RA) at Communications Group* *Sept. 2021- Mar. 2024*

- Designed a heterogeneous graph-transformer network to solve resource allocation optimization problems in THz systems.
- Proposed a graph recurrent network for the traffic prediction problem in wireless cellular networks.
- Supervisor: Prof. Vincent Wong

*Graduate Teaching Assistant* *Sept. 2021 - Present*

- "CPSC 540: Advanced Machine Learning" (Winter1 2024), "STAT 301: "Statistical Modelling for Data Science" (Winter1 2024), "STAT 203: Statistical Methods" (Winter1 2024), "CPSC 317: Introduction to Computer Networking" (Winter2 2023, Winter1 2023), "STAT 447C: Special Topics in Statistics" (Winter2 2023), "DSCI 100: Intro. to Data Science" (Winter2 2023, Winter1 2023, Winter2 2022, Winter1 2022), "PHYS 159: Introductory Physics Laboratory for Engineers" (Winter2 2023) "APSC 160: Intro. to Computation in Engineering Design" (Winter2 2021), "ELEC 203: Basic Circuit Analysis" (Winter1 2021)

**SenseNet Inc.** *Vancouver, Canada*

*Part-time Machine Learning Researcher* *Oct. 2023- Feb. 2024*

- Working on graph neural networks for wildfire detection using the information of sensors.
- Manager: Dr. Shahab Bahrami

**Sharif University of Technology (SUT)** *Tehran, Iran*

*RA at Cloud-Native Telecommunication Networks Technical Office* *Jun. 2020- Jun. 2021*

- Conducted research on 5G network architecture and software-defined networks.
- Supervisor: Prof. Babak Khalaj

*RA at Augmented Intelligence Research Lab* *Jul. 2019- Jan. 2020*

- Representation similarity analysis using FMRI Data and Brain computer interfaces.
- Worked on machine learning classification and EEG signals collected from patients with Alzheimer in order to diagnose the disease.
- Supervisor: Prof. Hamid Aghajan

*Teaching Assistant* *Sept. 2020- Apr. 2021*

- "Signals & Systems" (Spring 2021), "Data Networks (Graduate)" (Fall 2020), "Computer Networks" (Fall 2020), "Introduction to Machine Learning" (Fall 2020), "AI & Biological Computation" (Fall 2020), "Communications Systems" (Fall 2020).

## *Skills*

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|---|---|
| **Programming** | Python (Pytorch, TensorFlow, PySpark, Multithreading), R, Julia, C/C++, MATLAB & Simulink, Optimization solvers such as CVX, MOSEK. |
| **Languages** | Farsi (Native), English (Proficient) |

## *Coursework*

**Graduate courses at UBC**

- EECE 571D: Detection, Estimation and Learning
- EECE 571F: Deep Learning with Structures
- CPSC 540: Advanced Machine Learning
- EECE 565: Communication Networks
- EECE 562: Statistical Signal Processing

**Graduate courses at SUT**

- Software-defined Mobile Networks
- Advanced Computer Networks
- Neuroscience of Learning, Memory and Cognition
- Distributed Systems
- Data Networks
- Foundations of Blockchain

**Selected undergraduate courses**

- CPSC 340: Machine Learning & Data Mining (UBC)
- Data Structure and Algorithm (SUT)
- Convex Optimization 1 (SUT)
- Digital Communication (SUT)