Ali Mehrabian

E-mail: alimehrabian619@yahoo.com ✻ *Github:* Ali_Meh619 ✻ *LinkedIn:* Ali_Meh619

Research Interests

- Large Language Models (LLMs)
- Learning-based Algorithm Design for Optimization Problems
- Image 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

Supervisor: Prof. Vincent Wong

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

Supervisor: Prof. Babak Khalaj

Publications

- **Ali Mehrabian** and Vincent W.S. Wong, "**A-Gamba: An Adaptive Graph-Mamba Model for Traffic Prediction in Wireless Cellular Networks**," *IEEE Wireless Communications Letters*, vol. 14, no. 6, Jun. 2025.
- **Ali Mehrabian**, Ehsan Hoseinzade, Mahdi Mazloum, and Xiaohong Chen, "**Mamba Meets Financial Markets: A Graph-Mamba Approach for Stock Price Prediction**," *In Proceedings of IEEE International Conference on Acoustics, Speech and Signal Processing (**ICASSP**)*, Hyderabad, India, Apr. 2025.
- **Ali Mehrabian**, Parsa Mojarad Adi, Moein Heidari, Ilker Hacihaliloglu, "**Implicit Neural Representations with Fourier Kolmogorov-Arnold Networks**," *In Proceedings of IEEE International Conference on Acoustics, Speech and Signal Processing (**ICASSP**)*, Hyderabad, India, Apr. 2025.
- Parsa Mojarad Adi, **Ali Mehrabian**, "**Fourier-based Learnable Activations for Implicit Signal Representations**," *Accepted in Neural Information Processing Systems (**NeurIPS**)* Workshop on Machine Learning and Compression, Vancouver, Canada, Dec. 2024.
- **Ali Mehrabian** and Vincent W.S. Wong, "**Joint Spectrum, Precoding, and Phase Shifts Design for RIS-aided Multiuser MIMO THz Systems**," *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

Vector Institute *Toronto, Canada*

Full-time Associate Applied Machine Learning Specialist *Sept. 2025 - Present*

- Working on developing an adaptive model context protocol (MCP)-based framework that evaluates agents and LLMs in an end to end manner.
- Supervisor: Dr. Arash Afkanpour

Yale University *New Haven, Connecticut*

Remote Graduate Research Assistant *Sept. 2024 - Apr. 2025*

- Proposed SAMBA for stock-price prediction task, reduced RMSE by up to 10.5% and increased IC and RIC by up to 85.4% and 80.3%, respectively, across DJIA, NASDAQ, and NYSE stock data.
- Advisor: Prof. Xiaohong Chen

The University of British Columbia (UBC) *Vancouver, Canada*

Graduate Teaching Assistant *Sept. 2021 - Apr. 2025*

- "CPSC 340: Machine Learning & Data Mining" (Winter2 2024, 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)

Graduate Research Assistant *Sept. 2021 – Aug. 2024*

- Supervisor: Prof. Vincent Wong
  - Proposed GNNs and Graph-Mamba models for cellular traffic prediction; improved RMSE and MAE by up to 15.50% and 7.44%; achieved up to 7× faster training and 681× fewer multiply-accumulate (MAC) operations.
  - Designed a heterogeneous graph-transformer network for RIS-aided MIMO-THz resource allocation; improved system sum-rate by 8.8% and achieved faster training convergence.
- Collaborator: Prof. Ilker Hacihaliloglu
  - Proposed a Fourier-based Kolmogorov-Arnold network for implicit neural representations; improved PSNR and SSIM on the image representation task by up to 8.91% and 5.62%, and IoU on the occupancy volume task by up to 0.96%.

SenseNet Inc. *Vancouver, Canada*

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

- Developed and fine-tuned GNNs for wildfire anomaly detection using sensor data on AWS; shipped a Dockerized FastAPI service with async endpoints for real-time inference.
- Manager: Dr. Shahab Bahrami

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

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

- Worked with Docker and SDN emulation tools to deploy 5G programmable network functions.
- Supervisor: Prof. Babak Khalaj

Peer-Review Activities

Reviewer for IEEE journals:
IEEE Communications Magazine, IEEE Open Journal of the Communications Society (OJ-COMS), IEEE Open Journal of the Computer Society (OJCS), IEEE Transactions on Vehicular Technology (TVT), IEEE Transactions on Cognitive Communications and Networking (TCCN), IEEE Wireless Communications Letters (WCL), IEEE Communications Letters, IEEE Open Journal of Vehicular Technology (OJVT).

Reviewer for major conferences:
IEEE ICASSP 2025, IEEE IJCNN 2025, IEEE MLSP 2025, IEEE PIMRC 2025, IEEE Globecom 2025, NeurIPS 2024.

Skills

Programming	Python (Pytorch, TensorFlow, PySpark, Multithreading), R, Julia, SQL, 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)