

Zijiang Yan

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Bio

I am a researcher specializing in wireless networks and AI-driven vehicular communication. I earned my BSc with an Honors degree in Computer Science and Statistics from York University, where I researched in the Next Generation Wireless Networks Lab under Prof. Hina Tabassum. My work focuses on optimizing beyond 5G/6G networks, deep reinforcement learning for autonomous driving, and AI-enabled vehicular communication. I aim to develop scalable, efficient solutions to enhance safety and performance in vehicular networks. Currently, I am exploring resource-aware communication, quantum-enhanced user association, and hybrid language models for optimizing driving and telecommunication policies, combining technical expertise with impactful research.

Education

York University

B.Sc., Hons. Dbl. Maj. in Computer Science & Statistics

Toronto, Canada

Sep 2016 to Aug 2021

- **Advisor:** Prof. Hina Tabassum
- **Project:** Optimizing V2I Communication for Self-Driving Vehicles: A Reinforcement Learning Approach

Experience

Cloud Engineer

Bell Media

Toronto, Canada

Oct 2021 to present

- Strengthened CI/CD pipeline stability by integrating GitLab and Jenkins, improving infra performance.
- Led the Lighthouse project with **Ansible**, enhancing system reliability and visibility across teams.
- Contributed to the CRNA DNS project with **Terraform**, ensuring robust and secure connectivity.
- Migrated Satellite systems to Bell's Centralized Satellite platform, boosting scalability and efficiency.
- Transitioned GitLab runners to AWS shared runners and maintained Jenkins pipelines for the Mobile App team, improving build efficiency by 27%.

Machine Learning Researcher

York University

Toronto, Canada

Mar 2021 to present

- Developed a reinforcement learning framework to optimize autonomous driving and network policies, enhancing decision-making efficiency.
- Designed a quantum-enhanced user association model for handoff-aware vehicular networks, applicable to both autonomous vehicles and drones.
- Created a simulation environment to integrate multi-agent communication and autonomous driving policies, fostering robust collaboration.
- Modeled vehicle-to-infrastructure (V2I) networks to maximize data rates while minimizing collisions and communication disruptions.

Software Developer Intern

Bell Canada

Toronto, Canada

May 2021 to Aug 2021

- Utilized machine learning and deep learning techniques on AWS to analyze customer data, uncovering trends and improving marketing strategies.
- Designed and implemented predictive models for customer churn and lifetime value, driving data-informed decision-making.




Publications

Optimizing Vehicular Networks with Variational Quantum Circuits-based Reinforcement Learning

May 2024

Zijiang Yan, Ramsundar Tanikella, Hina Tabassum

[10.1109/INFOCOMWKSHPS61880.2024.10620888](https://doi.org/10.1109/INFOCOMWKSHPS61880.2024.10620888) [🔗](#) (IEEE International Conference on Computer Communications (INFOCOM'24 Poster))

- Multi-UAV Speed Control with Collision Avoidance and Handover-Aware Cell Association - DRL with Action Branching** Dec 2023
Zijiang Yan, Wael Jaafar, Bassant Selim, Hina Tabassum
[10.1109/GLOBECOM54140.2023.10436730](https://doi.org/10.1109/GLOBECOM54140.2023.10436730)  (IEEE Global Communications Conference (GLOBECOM'23))
- Reinforcement Learning for Joint V2I Network Selection and Autonomous Driving Policies** Dec 2022
Zijiang Yan, Hina Tabassum
[10.1109/GLOBECOM48099.2022.10001396](https://doi.org/10.1109/GLOBECOM48099.2022.10001396)  (IEEE Global Communications Conference (GLOBECOM'22))
- CVaR-Based Variational Quantum Optimization for User Association in Handoff-Aware Vehicular Networks** May 2025
Zijiang Yan, Hao Zhou, Jianhua Pei, Aryan Kaushik, Hina Tabassum, Ping Wang
 IEEE International Conference on Communications (ICC'25 Under Review)
- Hybrid LLM-DDQN based Joint Optimization of V2I Communication and Autonomous Driving** Oct 2024
Zijiang Yan, Hao Zhou, Hina Tabassum, Xue Liu
[10.48550/arXiv.2410.08854](https://doi.org/10.48550/arXiv.2410.08854)  (IEEE Wireless Communications Letters (Under Review))
- Generalized Multi-Objective Reinforcement Learning with Envelope Updates in URLLC-enabled Vehicular Networks** May 2024
Zijiang Yan, Hina Tabassum
[10.48550/arXiv.2405.11331](https://doi.org/10.48550/arXiv.2405.11331)  (IEEE Transactions on Vehicular Technology (Under Review))

Projects

RF TeraHertz Highway Environment

RF-THz-Highway-env 

- Developed a multi- objective simulation environment for autonomous driving and vehicular communication.
- Tools Used: Python, OpenAI Gym

Skills

Programming Languages: Python, Java, C++, SAS, R, SQL, Bash

Tools and Platforms: AWS, Terraform, GitLab, Jenkins, Kafka, MariaDB

Specialized Areas: Generative Artificial Intelligence, Large language Model, Deep Learning, Quantum Computing, Vehicular Communication, Autonomous Driving

Professional Activities

Conference Session Chair: GLOBECOM'23

Technical Program Reviewer: ICC, GLOBECOM, WCNC, VTC, DySPAN

Journal Reviewer: TWC, TCOM, TCCN, OJ-COMS, COMML, IoTM

Honors and Awards

- 11th China Youth Creative Competition (Science and Technology Track) - **Silver Award**, 2024
- Bell Geekfest Best Presentation, Bell Canada, 2023
- Lassonde Undergraduate Research Award (LURA), York University, 2021
- York University International Award of Merit, York University, 2021
- Dean's List, Lassonde School of Engineering, York University, 2018