

Zijiang Yan

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About Me

I am a researcher specializing in wireless networks and AI-driven vehicular communication. I earned my BSc with 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, – Toronto, Canada

Sep 2016 to Aug 2021

- B.Sc., Hons. Dbl. Maj. in Computer Science & Statistics
- **Advisor:** Prof. Hina Tabassum
- **Thesis:** 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 performance and security.
- 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.
- Automated data processing workflows, leveraging AWS services to reduce processing time by 50%.
- 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 (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
<i>Zijiang Yan</i> , Wael Jaafar, Bassant Selim, Hina Tabassum	
10.1109/GLOBECOM54140.2023.10436730 (IEEE Global Communications Conference (GLOBECOM'23))	
Reinforcement Learning for Joint V2I Network Selection and Autonomous Driving Policies	Dec 2022
<i>Zijiang Yan</i> , Hina Tabassum	
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
<i>Zijiang Yan</i> , 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
<i>Zijiang Yan</i> , Hao Zhou, Hina Tabassum, Xue Liu	
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
<i>Zijiang Yan</i> , Hina Tabassum	
10.48550/arXiv.2405.11331 (IEEE Transactions on Vehicular Technology (Under Review))	

Projects

RF TeraHertz Highway Environment	Rf-THz-Highway-env
<ul style="list-style-type: none"> Developed an multi-agent 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

- Bell Geekfest Best Presentation, 2023
- Lassonde Undergraduate Research Award (LURA), York University, 2022
- Dean's List, Lassonde School of Engineering, York University, 2018