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   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

Hybrid LLM-DDQN based Joint Optimization of V2I Communication and Autonomous Driving   Feb 2025

Zijiang Yan, Hao Zhou, Hina Tabassum, Xue Liu

10.1109/LWC.2025.3539638 (IEEE Wireless Communications Letters)

CVaR-Based Variational Quantum Optimization for User Association in Handoff-Aware Vehicular Networks   Jun 2025

Zijiang Yan, Hao Zhou, Jianhua Pei, Aryan Kaushik, Hina Tabassum, Ping Wang

10.48550/arXiv.2501.08418 (ICC'25 - IEEE International Conference on Communications)

Optimizing Vehicular Networks with Variational Quantum Circuits-based   May 2024
Reinforcement Learning

Zijiang Yan, Ramsundar Tanikella, Hina Tabassum

10.1109/INFOCOMWKSHPS61880.2024.10620888 (INFOCOM'24 Poster - IEEE International Conference on Computer Communications)

Multi-UAV Speed Control with Collision Avoidance and Handover-Aware Cell   Dec 2023
Association - DRL with Action Branching

Zijiang Yan, Wael Jaafar, Bassant Selim, Hina Tabassum

10.1109/GLOBECOM54140.2023.10436730 (GLOBECOM'23 - IEEE Global Communications Conference)

Reinforcement Learning for Joint V2I Network Selection and Autonomous   Dec 2022
Driving Policies

Zijiang Yan, Hina Tabassum

10.1109/GLOBECOM48099.2022.10001396 (GLOBECOM'22 - IEEE Global Communications Conference)

Semantic-Aware Adaptive Video Streaming Using Latent Diffusion Models for   Feb 2025
Wireless Networks

*Zijiang Yan**, Jianhua Pei*, Hongda Wu, Hina Tabassum, Ping Wang

10.48550/arXiv.2502.05695 (IEEE Wireless Communications (Under Review))

Generalized Multi-Objective Reinforcement Learning with Envelope Updates in   May 2024
URLLC-enabled Vehicular Networks

Zijiang Yan, Hina Tabassum

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: TMC, TWC, TCOM, TCCN, OJ-COMS, COMML, IOTM

Honors and Awards

- 11th China Youth Creative Competition (Technology Inovation Track) - *Silver Award* , 2024
- Bell Geekfest Best Presentation, 2023
- Lassonde Undergraduate Research Award (LURA), York University, 2022
- Dean's List, Lassonde School of Engineering, York University, 2018