QUANWEI ZHANG

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https://quanwei-zhang.github.io/

EDUCATION

Department of Computer Science, University of Victoria Victoria, Canada
Ph.D. in Computer Science 2024 - Present
- Research focus: *Performance Analysis and Optimization of Networked Systems*

School of Cyber Science and Engineering, Southeast University Nanjing, China
M.E. in Computer Network Engineering 2021 - 2024
- Recommended Graduate Student [Transcript]
- Research focus: *Network Traffic Analysis & High-Speed Data Stream Processing*

School of Cyber Science and Engineering, Southeast University Nanjing, China
B.E. in Computer Network Engineering 2017 - 2021
- GPA:3.63/4.0 [Transcript]

AWARDS AND HONORS

- University of Victoria Fellowship 2024
- National Scholarship, China 2023
- Graduate Academic Scholarship 2022

PUBLICATIONS

[1] **Quanwei Zhang**, Jianping Pan. "Decentralized Gossip Learning with Adaptive OOD Detection for LEO Satellite Networks under Non-IID Data" *IEEE GLOBECOM*, 2025.

[2] **Quanwei Zhang**, Zhiming Huang, Jinwei Zhao, Jianping Pan. "A Congestion Control Test Suite for Real-Time Communication" *ACM MMSys*, 2025.

[3] Jiachen Yang, Jiankun Peng, **Quanwei Zhang**, et al. "Monocular Vision Approach for Soft Actor-Critic Based Car-Following Strategy in Adaptive Cruise Control" *Expert Systems with Applications*, 2025. [Link]

[4] **Quanwei Zhang**, Qingjun Xiao, Yuexiao Cai. "A Generic Sketch for Estimating Super-Spreaders and Per-Flow Cardinality Distribution in High-Speed Data Streams" *Computer Networks*, 2023. [Link]

[5] Qingjun Xiao, Lin Wen, **Quanwei Zhang**. "Multi-Resolution Odd Sketch for Mining Jaccard Similarities between Dynamic Streaming Sets" *2021 IEEE 24th International Conference on Computer Supported Cooperative Work in Design (CSCWD)*, 2021. [Link]

[6] **Quanwei Zhang**, Dazhong Li, Yue Fei, et al. "RDCPF: A Redundancy-Based Duty-Cycling Pipelined-Forwarding MAC for Linear Sensor Networks" *Sensors*, 2020. [Link]

PATENTS

[1] Qingjun Xiao, **Quanwei Zhang**, Yuexiao Cai. "Method for Estimating High-Speed Network Progressive Base and Distribution Function Based on General Outline". China Patent CN117336209A, Filed. [Link]

[2] Fei Tong, **Quanwei Zhang**, Dazhong Li, et al. "Linear Sensor Network Multi-Hop Data Collection Method Based on Redundant Nodes" China Patent CN112073931B, Granted. [Link]

ACADEMIC RESEARCH EXPERIENCE

Decentralized Gossip Learning with Adaptive Out-of-Distribution Detection 2025.01 - 2025.06
- Implemented a decentralized federated learning framework with lightweight OOD detection to reduce ineffective transmissions and enhance robustness under heterogeneous data.
- Designed a dynamic grouping strategy using feature-space similarity to optimize inter-node communication efficiency.
- Outperformed state-of-the-art decentralized FL methods in convergence accuracy and communication cost on benchmark datasets. *Published to IEEE GLOBECOM (2025).*

Congestion Control Test Suite for Real-Time Communication 2024.11 - 2025.01
- Developed an evaluation framework for WebRTC congestion control algorithms.
- Enabled per- and multi-flow testing in heterogeneous network conditions (Wi-Fi, LTE, satellite).
- Integrated AlphaRTC, Mahimahi, and Containernet for reproducible network emulation. *Published to MMSys'25.*

SKILLS

Languages: Mandarin (native), English (fluent), Japanese (N3)

Programming: `Python`, `C/C++`, `MATLAB`, `Swift/SwiftUI`, LaTeX.

Networking & Systems: RTC, AlphaRTC, Congestion Control, Mahimahi, Containernet