Quanwei Zhang

quanweizhang@uvic.ca

Education

Department of Computer Science, University of Victoria — Victoria, Canada
Ph.D. in Computer Science — 2024 - Present
- Research focus: *ML-driven Congestion Control for RTC and Video Streaming*

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

Awards and Honors

- University of Victoria Fellowship — 2024
- National Scholarship, China — 2023
- Graduate Academic Scholarship — 2022
- 2021 Jiangsu Outstanding Undergraduate Thesis (Design) of Ordinary Universities, Team Award — 2022
- Huawei Scholarship — 2021

Publications and Patents

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

[2] 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]

[3] **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]

[4] 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]

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

[6] Fei Tong, **Quanwei Zhang**, Dazhong Li, et al. "Linear Sensor Network Multi-Hop Data Collection Method Based on Redundant Nodes" CN112073931B, filed Dec 2020. Patent Granted. [Link]

Academic Research Projects

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.*

Enhancing Monocular Vision-Based Velocity and Distance Estimations with GNN — 2023.11 - 2024.03
- Designed a Graph Neural Network (GNN)-enhanced model to improve velocity and distance estimation in monocular vision-based adaptive cruise control.
- Trained deep neural networks using real-world datasets with PyTorch.
- Collaborative Project with School of Transportation, Southeast University. *Published to ESWA (2025).*

Designing a Generic Sketch in High-Speed Network — 2022.07 - 2023.09
- Developed a generic and scalable data structure for high-speed packet feature extraction.
- Improved the performance of generic sketch in terms of memory efficiency, moment estimation accuracy and distribution reconstructing accuracy. *Published to Computer Networks (2023).*

Skills

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

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

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