Langtian Qin

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EDUCATION

University of California, Irvine **Sep. 2024 – Now**
Ph.D. in Computer Science *Irvine, CA*

- **GPA:3.9/4.0**

University of Science and Technology of China (USTC) **Sep. 2021 – Jun. 2024**
M.S. in Electrical Engineering *Hefei, China*

- **GPA:3.78/4.3 - Rank: 4/71**

Xidian University **Sep. 2017 – Jun. 2021**
B.E. in Information Engineering *Xi'an, China*

- **GPA:3.8/4.0 - Rank: 3/156**

RESEARCH EXPERIENCE

Intelligent and Autonomous Systems Lab, UC Irvine, CA **Apr. 2024 – Now**
Research Assistant

- ***Title: Semantic Communications Via Dynamic Neural Networks (DNN)***
- Proposed a hierarchical semantic communication framework for distributed dynamic sensor fusion. Implemented Rainbow Deep Q-learning to obtain the optimal sensor fusion and transmission strategy.
- Developed a semantic communication framework via multi-branch neural networks for flexible data compression. Implemented multi-agent context multi-armed bandit algorithm to obtain the optimal data compression and resource allocation strategy.
- Designed a test time adaption framework for semantic communications to overcome dual domain shifts, including domain shift detection, DNN statistic calibration and batch size scheduling.

Center for Wireless Communications, UC San Diego, CA **Sep. 2023 – Dec. 2023**
Graduate Visiting Student

- ***Title: Bridging the Sim-to-real Gap in AI-Driven Networks Using Hybrid Simulation***
- Implemented a mmWave mesh network testbed based on 802.11ad 60GHz radios. Collected network performance trace data based on the testbed.
- Designed a deep reinforcement learning (DRL)-enhanced wireless network simulator to fill the sim-to-real gap between simulation and actual network implementation.

Broadband Communications Lab, UC Santa Cruz, CA **Jun. 2022 – Sep. 2022**
Summer Research Intern

- ***Title: Adaptive DNN for Dynamic Wireless Channel Estimation***
- Designed deep learning (DL)-based channel estimators with different training methods or data inputs.
- Developed an online update algorithm for the channel estimator, enabling robust operation in previously unseen, time-varying wireless channels.

Information Network Lab, USTC, China **Sep. 2021 – Jun. 2024**
Research Assistant

- ***Title: Task Offloading and Resource Allocation in User-Centric Mobile Edge Computing***
- Developed a DRL-based algorithm for task offloading and resource allocation in edge computing-enabled cell-free multiple-input multiple-output (MIMO) networks.
- Proposed a joint user association, power control, and computing-resource allocation scheme for non-orthogonal multiple acces (NOMA)-assisted edge computing using matching-game and graph-theoretic optimization.
- Designed a joint service-caching and base-station clustering framework for cell-free MIMO networks using generalized Benders decomposition (GBD) and alternating direction method of multipliers (ADMM) optimization methods.

PUBLICATIONS

[**C1**] **L. Qin**, S. Najeh, Y. Chen, M. Levorato and C. F. Chiasserini, "HERACLES: Hierarchical Semantic Communications for Distributed Dynamic Sensor Fusion," in ***IEEE International Conference on Distributed Computing Systems (ICDCS)***, 2025.

[**J1**] **L. Qin**, H. Lu, Y. Chen, B. Chong and F. Wu, "Towards Decentralized Task Offloading and Resource Allocation in User-Centric Mobile Edge Computing," in ***IEEE Transactions on Mobile Computing (TMC)***, vol. 23, no. 12, pp. 11807-11823, Dec. 2024.

[**J2**] **L. Qin**, H. Lu, Y. Chen, Z. Gu, D. Zhao and F. Wu, "Energy-Efficient Blockchain-enabled User-Centric Mobile Edge Computing," in ***IEEE Transactions on Cognitive Communications and Networking (TCCN)***, vol. 10, no. 4, pp. 1452-1466, Aug. 2024.

[**J3**] **L. Qin**, H. Lu, Y. Chen, B. Chong and F. Guo, "Joint Transmission and Resource Optimization in NOMA-assisted IoVT with Mobile Edge Computing," in ***IEEE Transactions on Vehicular Technology (TVT)***, vol. 73, no. 7, pp. 9984-9999, Jul. 2024.

[**J4**] **L. Qin**, H. Lu, Y. Lu, C. Zhang and F. Wu, "Joint Optimization of Base Station Clustering and Service Caching in User-Centric MEC," in ***IEEE Transactions on Mobile Computing (TMC)***, vol. 23, no. 5, pp. 6455-6469, May 2024.

[**J5**] **L. Qin**, H. Lu and F. Wu, "When the User-Centric Network Meets Mobile Edge Computing: Challenges and Optimization," in ***IEEE Communications Magazine***, vol. 61, no. 1, pp. 114-120, Jan. 2023.

[**J6**] B. Chong, F. Guo, H. Lu and **L. Qin**, "On the Distribution of SINR for Cell-Free Massive MIMO Systems," in IEEE Transactions on Communications," in ***IEEE Transactions on Communications (TCOM)***, 2024.

[**J7**] B. Chong, H. Lu, **L. Qin**, Z. Xue and F. Guo and F. Guo, "Performance Optimization on Cell-Free Massive MIMO-Aided URLLC Systems With User Grouping," in ***IEEE Transactions on Wireless Communications (TWC)***, vol. 23, no. 10, pp. 13977-13992, Oct. 2024.

[**J8**] Y. Chen, H. Lu, **L. Qin**, C. Zhang and C. Chen, "Statistical QoS Provisioning Analysis and Performance Optimization in xURLLC-enabled Massive MU-MIMO Networks: A Stochastic Network Calculus Perspective," in ***IEEE Transactions on Wireless Communications (TWC)***, vol. 23, no. 7, pp. 8044-8058, Jul. 2024.

[**J9**] C. Wu, H. Lu, Y Chen and **L. Qin**, "Cross-Layer Optimization for Statistical QoS Provision in C-RAN with Finite-Length Coding," in ***IEEE Transactions on Communications (TCOM)***, vol. 72, no. 6, pp. 3393-3407, Jun. 2024.

[**J10**] Y. Chen, H. Lu, **L. Qin**, C. Wu and C. W. Chen, "Streaming 360° VR Video With Statistical QoS Provisioning in mmWave Networks From Delay and Rate Perspectives," in ***IEEE Transactions on Wireless Communications (TWC)***, vol. 24, no. 6, pp. 4721-4737, Jun. 2025.

SKILLS

Languages: MATLAB, Python, C/C++, Java, JavaScript, Solidity

Developer Tools: Pycharm, VS Code, WebStorm, Eclipse, Keil, Remix, CORE, Mininet

Technologies/Frameworks: Linux, GitHub, Git, Tensorflow, Pytorch, Cesium