QUN WANG

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EDUCATION

Utah State University *August 2016 - May 2022*
Ph.D. in Electrical and Computer Engineering

Xidian University, China *August 2013 - March 2016*
M.S. in Electrical Engineering

Shaanxi University of Technology, China *August 2009 - May 2013*
B.S. in Physics

PROFESSIONAL POSITIONS AND RANKS HELD

Assistant Professor	San Francisco State University (Aug 2022 - Present)
Research Affiliate	Lawrence Berkeley National Lab (Aug 2022 - Aug 2024)
Postdoctoral Researcher	Lawrence Berkeley National Lab (May 2022 - Aug 2022)

HONORS AND AWARDS

- KumoRFM Hackathon First prize, Fall 2025.
- 2022 Exemplary Reviewer from IEEE Wireless Communications Letter, Fall 2022.

RESEARCH INTERESTS SUMMARY

My research bridges next-generation wireless networks, machine learning, and edge–cloud collaboration. I investigate energy-aware optimization, privacy-preserving LLM inference, and spectrum sharing security to support intelligent, resilient, and sustainable infrastructures for smart cities, industrial IoT, and beyond.

GRANTS AND CONTRACTS

Funded Grant Proposal

1. Collaborative Research: CISE Core Small: NeTs: Intelligent Reflecting Surface Assisted Physical Layer Security Enhancement for Ultra-dense IoT Networks, **Lead PI, $225,000**, Awarded by NSF 2523751.
2. CRII: NeTS: Intelligent Reflecting Surface Assisted Transmitting and Sensing for Spectrum Sharing and Coexistence of Heterogeneous Wireless Systems, **PI, $175,000**, Awarded by NSF 2451262.
3. Small Size LLM Enhancement for Privacy-Preserving Network Threat Detection, **PI, $1,500 API credits**, Awarded by OpenAI Cybersecurity Grant Program.
4. "Gilead Innovation Initiative 2025 Summer Research Award," **Lead PI, $12,000**, Awarded by SFSU Gilead Innovation.
5. "Design Effective and Equitable Professional Learning for Middle School Computer Science Teachers", **Co-PI, $1,396,551**, Awarded by NSF 23-596 Discovery Research PreK-1.
6. "Intelligent Wireless Spectrum Monitoring with Decentralized On-device Learning," **Co-PI, $18,500**, Awarded by SFSU RSCA Fund.

Unfunded Grant Proposal

1. "Collaborative Research: CISE MSI: RDP: CNS: Intelligent Reflecting Surface-assisted Physical Layer Security Enhancement for Ultra-dense IoT Networks", $30,000, submitted to NSF CISE MSI Research Expansion, Spring 2024.
2. "RET Site: META: Research Experience in Machine Learning and Ethics for High School Teacher Advancement", Co-PI, $599,978, submitted to NSF 24-503: Research Experiences for Teachers (RET) in Engineering and Computer Science, Spring 2024.
3. "Enhancing Security and Resiliency in SDN-based CPS through AI-Driven Defensive Deception", Co-PI, submitted to Computing Alliance of Hispanic-Serving Institutions (CAHSI), $40,000, Spring 2024.
4. "Intelligent Wireless Spectrum Monitoring with Decentralized On-device Learning," Co-Investigator, $25,000, Co-PI, submitted to the Ken Fong Translational Research Award, Spring 2023.
5. "Intelligent Caching Assisted Collaborative Edge Federation System for Scientific IoT Networks" PI, $750,000, submitted to Department of Energy FY 2023 Funding for Accelerated, Inclusive Research (FAIR) Grant, Spring 2023.
6. "Intelligent Cybersecurity Enhancement System for Spectrum Sharing based IoT Network," PI, $14,000, submitted to Development of Research and Creativity (DRC) Grant by the CSU Chancellor's Office, Fall 2022.

Engaged in projects funded by grants

1. Participate in the CS4NorthCal (NSF 2219495) project with Dr. Hao Yue, teaching network knowledge in the Spring 2023, Spring 2024, and Spring 2025 sessions.
2. Participate in the Junior Science and Humanities Symposium (JSHS) project with Dr. Hao Yue and Dr. Sybil Yang, Spring 2023.

TEACHING EFFECTIVENESS

Classes Taught at SFSU

1. CSC 220 Data Structures
2. CSC 645 Computer Networks
3. CSC 845 Advanced Computer Networks

Master's Students (Chair/Advisor)

1. Shun Usami, "Tinygrand-based LLM Post-training on Edge Devices", Fall 2025-Present
2. Yang Liu, "GNN-assisted Spectrum Sharing and Sensing in Next-generation Networks", Fall 2025-Present
3. Binrong Zhu, "Energy-aware Edge LLM-assisted System Optimization." Spring 2025-Present
4. Guiran Liu, "QoS Oriented Edge Cloud GenAI Data Processing Optimization." Spring 2025-Present
5. Mekonnen Tesfamichael Tesfazien, "Enhancing UI Navigation Through Advanced Vision Language Models", Fall 2024-Present.
6. Ruxue Jin, "Smart Waste Sorting Using Real-Time Object Detection with YOLOv5 and YOLOv8", Fall 2024-Spring 2025.

7. Xu Gu, "Summarizing Transcribed Speech with On-Device LLMs: Design, Implementation, and Evaluation" Fall 2024-Spring 2025.
8. David Chen, "Deep Learning Based Secure Energy Efficiency Optimization For Wireless IoT Networks," Spring 2024-Fall 2024.
9. Jijeong Lee, "Stress Detector for College Students," Spring 2024-Present.
10. Parth Pareshkumar Desai, "Anonymized Peer Review Matcher," Spring 2024-Present.
11. Satvik Verma, "Stress Detector for College Students," Spring 2024-Spring 2025.
12. Yasaman Pakdel, "Privacy preservation in federated learning algorithms," Spring 2024.

Teaching-related activities

1. Advisor of CAHSI (Computing Alliance of Hispanic-Serving Institutions) Local REU (Research Experiences for Undergraduates), Spring 2024.
2. Student mentor of Cal-Bridge CS Academic Campus Groups, Fall 2023-Spring 2024.
3. Faculty Coach for Social Engineering Competition, Spring 2024.
4. Faculty Coach for Embedded Capture the Flag Competition, Spring 2024.
5. Faculty Coach for Collegiate Penetration Testing Competition, Fall 2023.
6. Update Material for CSC 845: Advanced Computer Networks, Fall 2023-Spring 2024.
7. Participate CEETL Small Group Instructional Feedback Program, Fall 2023.
8. Participate CEETL Excellence in Online Pedagogies Program, Spring 2024.
9. Participating in the SFSU 2023-2024 ADVANCE Scholarship Hub Program, Fall 2023-Spring 2024.
10. Participate in the Center for Science and Mathematics Education Learning Assistant Program, Fall 2022-Spring 2023.
11. Participate in the CSU Advancing Inclusive Mentoring Program, Spring 2023.
12. Participate in the CEETL Professional Learning Communities, Fall 2022.

EXPERIENCE

San Francisco State University
Assistant Professor, Computer Science Aug 2022 - Present

- Create Cybersecurity and Intelligent Distributed Edge Research (CIDER) Lab focuses on advancing next-generation intelligent wireless communication, edge intelligence applications, and affordable AI solutions.
- Developed and taught computer network and data structure courses; applied GenAI/ML to optimize edge computing systems.
- Mentored 20 graduate/undergraduate students on edge computing-based machine learning and security projects.
- Collaborated on CS4ALL with multi-institutional teams.

Lawrence Berkeley National Lab
Postdoctoral Scholar & Affiliate May 2022 - Aug 2024

- Designed IoT sensor network testbeds using Python and C++ under Dr. John Wu and Dr. Mariam Kiran.

- Supervised summer interns.

Utah State University
Graduate Research Assistant Aug 2016 - May 2022

- Improved 5G/6G systems with edge computing and advanced wireless communication techniques (NOMA, MIMO,IRS, etc).
- Applied LSTM networks to predict network traffic loads, enhancing energy efficiency by 80%.
- Collaborated with Idaho National Lab on ML-assisted spectrum sharing security.

PUBLICATIONS

*Denotes a student author I advised

Peer-reviewed Journal Publications:

1. M. Xiang, Y. Zhou, H. Zhang, **Q. Wang**, et al., "Exploring Communication Technologies, Standards, and Challenges in Electrified Vehicle Charging," *arXiv preprint arXiv:2403.16830*, 2024 (Accepted by IEEE Open Journal of the Communications Society).
2. H. Hu, L. Shen, F. Zhou, and **Q. Wang**, "Intelligent Energy-Efficient Resource Allocation for Multi-UAV-Assisted Mobile Edge Computing Networks," accepted by *China Communications*, Fall 2023.
3. **Q. Wang**, H. Sun, R. Q. Hu and A. Bhuyan, "When Machine Learning Meets Spectrum Sharing Security: Methodologies and Challenges," *in IEEE Open Journal of the Communications Society*, vol. 3, pp. 176-208, 2022.
4. H. Hu, X. Zhou, **Q. Wang**, and R. Q. Hu, "Online computation offloading and trajectory scheduling for UAV-enabled wireless powered mobile edge computing," *in China Communications*, vol. 19, no. 4, pp. 257-273, April 2022.
5. H. Hu, W. Song, **Q. Wang**, R. Q. Hu, and H. Zhu, "Energy Efficiency and Delay Tradeoff in an MEC-Enabled Mobile IoT Network", Accept by *IEEE Internet of Things J.*
6. H. Hu, **Q. Wang**, R. Q. Hu, H. Zhu, "Mobility-aware offloading and resource allocation in an MEC-enabled IoT network with energy harvesting," *IEEE Internet of Things J.*, vol. 8, no. 24, pp. 17541-17556, 15 Dec.15, 2021.
7. **Q. Wang**, F. Zhou, R.Q. Hu, and Y. Qian, "Energy efficient robust beamforming and cooperative jamming design for IRS-assisted MISO networks," *IEEE Trans. Wireless Commun.*, vol. 20, no. 4, pp. 2592-2607, April 2021.
8. **Q. Wang**, L. T. Tan, R. Q. Hu, Y. Qian, "Hierarchical energy-efficient mobile edge computing in IoT networks," *IEEE Internet of Things J.*, vol. 7, no. 12, pp. 11626- 11639, Dec. 2020.

Peer-reviewed Conference Publications:

1. B. Zhu*, R. Jin*, Y. Liu*, G. Liu* and **Q. Wang**, "Edge AI Agent Design for Policy-Aware Urban Waste Management", accepted by *Chen Institute Symposium for AI Accelerated Science 2025.*
2. G. Liu*, B. Zhu*, Y. Liu*, and **Q. Wang**, "Design of a Cross-Layer AI Agent for Secure Spectrum-Aware Network Slicing", accepted by *Chen Institute Symposium for AI Accelerated Science 2025.*
3. G. Liu*, B. Zhu*, and **Q. Wang**, "Attention-Guided Task Complexity Prediction for Edge-Cloud LLM Collaboration," accepted by *BayLearn 2025*, Fall 2025.
4. S. Liu*, **Q. Wang**, Z. Qin, et al., "IRS Assisted Decentralized Learning for Wideband Spectrum Sensing," accepted by *2025 International Symposium on Intelligent Computing and Networking (ISICN 2025)*, Spring 2025.

5. D. Chen*, **Q. Wang**, H. Sun, and Y. Hao, "GNN Based PLS Enhancement for Next Generation Spectrum Sharing Industrial Networks," accepted by *2025 International Symposium on Intelligent Computing and Networking (ISICN 2025)*, Spring 2025.

6. S. Verma*, **Q. Wang**, and E. Wes Bethel, "Intelligent IoT Attack Detection Design via ODLLM with Feature Ranking-based Knowledge Base," accepted by *The Association for the Advancement of Artificial Intelligence (AAAI) 2025 Spring Symposium Series*, Spring 2025.

7. W. Guo*, **Q. Wang**, H. Yue, H. Sun, R. Q Hu., "Efficient Phishing URL Detection Using Graph-based Machine Learning and Loopy Belief Propagation." accepted by *IEEE ICC 2025*.

8. H. Hu, Z. Chen, **Q. Wang**, et al., "Task Allocation and Trajectory Scheduling for UAV Swarm-Assisted Aerial-Ground Collaborative Computing Networks," *2025 International Wireless Communications and Mobile Computing (IWCMC)*, 2025, pp. 877-882.

9. S. Liu*, **Q. Wang**, and Z. Qin, "Intelligent Reflecting Surface Assisted Wireless Spectrum Monitoring with Decentralized On-device Learning," accepted by *2024 International Conference on Data Science and Advanced Analytics Student Forum*, Fall 2024 (**with travel grant**).

10. S. Verma* and **Q. Wang**, "Intelligent IoT Attack Detection Design via LLM-based Feature Ranking," accepted by *2024 International Conference on Data Science and Advanced Analytics Student Forum*, Fall 2024 (**with travel grant**).

11. J. Xu, **Q. Wang**, Y. Cao, et al. "A general-purpose device for interaction with llms." Accepted by *Future Technologies Conference (FTC) 2024*.

12. X. Ma, **Q. Wang**, H. Sun, et al., "CSMAAFL: Client Scheduling and Model Aggregation in Asynchronous Federated Learning," *ICC 2024 - IEEE International Conference on Communications*, 2024, pp. 274-279.

13. H. Hu, S. Hao, **Q. Wang**, et al., "Robust Trajectory and Task Allocation in Secure UAV-Assisted MEC System with Cooperative Jamming," *2023 IEEE 23rd International Conference on Communication Technology (ICCT)*, 2023, pp. 1342-1347.

14. **Q. Wang**, F. Zhou, H. Hu, and R.Q. Hu, "Energy-efficient design for IRS-assisted MEC networks with NOMA", accepted by *IEEE WCSP 2021*.

15. X. MA, H. Sun, **Q. Wang**, "User scheduling for federated learning through over-the-air computation." Proc. *VTC Fall, 2021*.

16. **Q. Wang**, H. Hu, H. Sun and R.Q. Hu, "Secure and energy-efficient offloading and resource allocation in a NOMA-based MEC network," Proc. *IEEE/ACM Symposium on Edge Computing (SEC)*, pp. 420-424, 2020.

17. H. Hu, W. Song, **Q. Wang**, et al., "Mobility-aware offloading and resource allocation in MEC-enabled IoT networks", Proc. *16th International Conference on Mobility, Sensing and Networking (MSN)*, pp. 554-560, 2020.

18. H. Sun, **Q. Wang**, X. Ma, et al., "Towards green mobile edge computing offloading systems with security enhancement," *2020 Intermountain Engineering, Technology and Computing (IETC)*, Orem, UT, USA, 2020, pp. 1-6.

19. **Q. Wang**, F. Zhou, R. Q. Hu, and Q. Yi, "Energy-efficient beamforming and cooperative jamming in IRS-assisted MISO networks," Proc. *IEEE ICC*, Dublin, Ireland, 2020.

20. **Q. Wang** and F. Zhou, "Fair resource allocation in an MEC-enabled ultra-dense IoT network with NOMA," Proc. *2019 IEEE ICC Workshops*, Shanghai, China, 2019, pp. 1-6.

21. **Q. Wang**, L. T. Tan, R. Q. Hu, and G. Wu, "Hierarchical collaborative cloud and fog computing in IoT networks," Proc. *2018 WCSP*, Hangzhou, 2018, pp. 1-7.

22. H. Sun, **Q. Wang**, S. Ahmed, and R. Q. Hu, "Non-orthogonal multiple access in a mmWave based IoT wireless system with SWIPT," Proc. *2017 IEEE VTC Spring*, Sydney, NSW, 2017, pp. 1-5.

23. H. Sun, **Q. Wang**, R. Q. Hu, and Y. Qian, "Outage probability study in a NOMA relay system," Proc. *2017 IEEE WCNC*, San Francisco, CA, 2017, pp. 1-6.

Peer-Reviewed Publications (submitted under review):

1. W. Pan*, G. Liu*, B. Zhu*, **Q. Wang**, Y. Lu, and B. Lin, "Rethinking On-Device LLM Reasoning: Why Analogical Mapping Outperforms Abstract Thinking for IoT DDoS Detection", Submitted to *IEEE ICC 2026*.

2. X. Gu*, **Q. Wang**, W. Pan*, X. Chen, and H. Yue, "Structured Lightweight Speech Summarization with On-Device LLMs and Retrieval-Augmented Refinement", Submitted to *IEEE ICNC 2026*.

CONFERENCE PRESENTATIONS

1. "IRS Assisted Decentralized Learning for Wideband Spectrum Sensing," 2025 International Symposium on Intelligent Computing and Networking (ISICN 2025), Spring 2025.

2. "GNN Based PLS Enhancement for Next Generation Spectrum Sharing Industrial Networks," 2025 International Symposium on Intelligent Computing and Networking (ISICN 2025), Spring 2025.

3. "Intelligent IoT Attack Detection Design via ODLLM with Feature Ranking-based Knowledge Base," The Association for the Advancement of Artificial Intelligence (AAAI) 2025 Spring Symposium Series, Spring 2025.

4. "Efficient Phishing URL Detection Using Graph-based Machine Learning and Loopy Belief Propagation." IEEE ICC 2025.

5. "Energy-efficient design for IRS-assisted MEC networks with NOMA", 13th International Conference on Wireless Communications and Signal Processing, Oct. 2021.

6. "Secure and energy-efficient offloading and resource allocation in a NOMA-based MEC network," ACM/IEEE Symposium on Edge Computing Virtual meeting, Nov. 2020.

7. "Energy-efficient beamforming and cooperative jamming in IRS-assisted MISO networks," IEEE ICC, Dublin, Ireland, Virtual meeting, April 2020.

8. "Fair resource allocation in a MEC-enabled ultra-dense IoT network with NOMA," IEEE ICC Workshops, Shanghai, China, May 2019.

CONTRIBUTIONS TO CAMPUS AND PROFESSIONAL SERVICE

- Graduate advisor; Student Affairs Committee ; Outreach Committee.
- **Guest Editor:** Special Issue "AI Advances in Edge Computing" of *Mathematics* (ISSN 2227-7390).
- **TPC Member:** 4th BDMLN Workshop in ICCCN 2024, 15th EAI Conference, 6th ICWCSP, GlobalComm 2023, ICCT 2023, IETC 2023, GlobalComm 2022, etc.
- Invited Reviewer for journals including IEEE Transactions on Wireless Communications, IEEE Internet of Things Journal, etc.