Jianqing Liu, Ph.D.

Department of Computer Science North Carolina State University, Raleigh, NC 27606 Tel: (732)543-3858, Email: jliu96@ncsu.edu, URL: www.jianqingliu.net

EDUCATION

Ph.D. in Computer Engineering	
ECE Department, University of Florida	May 2018
B.Eng. in Electrical Engineering EE Department, University of Electronic Science and Technology of China	June 2013
RESEARCH EXPERIENCE	
Assistant Professor CS Department, North Carolina State University (NC State)	2022 - Now
Assistant Professor ECE Department, University of Alabama in Huntsville (UAH)	2018 - 2022
Research Assistant Wireless Information and Networked Things Laboratory, University of Florida (UF)	2014 - 2018
Research Intern Teledyne LeCroy, Chestnut Ridge, NY, USA HONORS AND AWARDS	Summer 2014

TEACHING EXPERIENCE

Instructor 2018 - Now

- ♦ CSC/ECE 791-06: Quantum Communications and Network, NC State, F'22
- ♦ CPE211: Introduction to Computer Programming (C++), UAH, F'20
- ♦ CPE348: Introduction to Computer Networks, UAH, F'18'19'20'21, S'19'20'21'22
- ♦ CPE498: Cybersecurity Capstone, UAH, S'20
- ♦ CPE499: Project in Computer Engineering, UAH, S'19
- ♦ CPE648: Advanced Computer Networks, UAH, F'19'21

Teaching Assistant 2013 - 2017

- ♦ EEL6591: Wireless Networks, UF, S'17
- ♦ EEL4598/5718: Computer Communications, UF, F'16
- ♦ 14:332:382: Electromagnetic Fields, Rutgers University, S'14
- ♦ 14:332:363: Electronic Devices Laboratory, Rutgers University, F'13

STUDENT SUPERVISION

PhD Advisees

Steven Puckett (F'21 - now), Punya Gouda (S'22 - now), Zhizhen Li (F'22 - now), Stuart Pelletier (F'22 - now)

Role: Dissertation Committee Chair

MS Advisees

♦ Sopan Sarkar (F'18 - S'20)

Thesis: Radio-Layer Vulnerabilities of Bluetooth Low Energy: Exploitation and Attacks

Role: Thesis Committee Chair

Placement: PhD at University of Arizona

BS Advisees

William Siota, Tiffany Dinh, Edwin Estep, Gabriel Adamson

FUNDING

Total Amount: \$2,435,976

My Share as PI: \$1,371,000

- 1. PI, "ExpandQISE: Track 1: Virtual Quantum Networks: From Foundations to Field Tests", co-PI: Zheshen Zhang from University of Michigan, Sponsor: National Science Foundation, Total Amount: \$800,000, My Share: 70%, Period: 10/01/2022-09/30/2025.
- 2. Lead-PI, "Collaborative Research: CNS Core: Small: Privacy by Memory Design", site-PI: Na Gong from University of South Alabama, Sponsor: National Science Foundation, Total Amount: \$600,000, My Share: 50%, Period: 08/01/2022-07/31/2025.
- 3. Sole-PI, "CAREER: Taming Wireless Devices Cross-Layer Errors with Assistive Networked Edges", Sponsor: National Science Foundation, Total Amount: \$500,000, My Share: 100%, Period: 03/15/2021-02/28/2026.

- 4. Co-PI, "NCCoE Cybersecurity of Bio-genomic Data", PI: Thomas Morris from UAH, Sponsor: National Institute of Standards and Technology, Total Amount: \$429,976, Period: 08/01/2021-07/31/2022.
- 5. Sole-PI, "Secure Multi-party Computation Across Internet Clouds for Public Health", Sponsor: UAH, Total Amount: \$10,000, My Share: 100%, Period: 05/01/2021-04/30/2022.
- 6. Co-PI, "Remodel Cybersecurity Lab" (equipment grant), PI: Thomas Morris from UAH, Sponsor: COLSA Corporation, Total Amount: \$95,000, 01/11/2021.
- 7. Sole-PI, "Physical-layer Emulation for Cross-Technology Communications", Sponsor: UAH, Total Amount: \$1,000, My Share: 100%, Period: 01/01/2019-07/01/2019.

PROFESSIONAL SERVICES

Journal Editorship

Associate Editor, IEEE Transactions on Vehicular Technology, 2021-now

Guest Editor, Special Issue: Recent Advances in Mobile Communication and Network Security, IEEE/CIC China Communications, 2021

Conference Organization

• TPC Member:

IEEE International Conference on Computer Communications (INFOCOM)'22'23

IEEE International Conference on Communications (ICC)'18,'19,'20,'21,'22

IEEE/CIC International Conference on Communications in China (ICCC)'17,'18,'21

IEEE Global Communications Conference (GLOBECOM)'19,'20,'21,'22

IEEE International Conference on Multimedia Expo (ICME)'20

• Session Chair:

IEEE INFOCOM'22, IEEE GLOBECOM'20, IEEE ICC'19, IEEE International Conference on Computing, Networking and Communications (ICNC)'19

• Publication Chair:

16th EAI International Conference on Mobile and Ubiquitous Systems: Computing, Networking and Services (MobiQuitous)'19

Reviewers for Journal Submissions

IEEE Communications Surveys & Tutorials

IEEE/ACM Transactions on Networking

IEEE Journal of Selected Areas on Communications

IEEE Transactions on Dependable and Secure Computing

IEEE Transactions on Vehicular Technology

IEEE Transactions on Mobile Computing

IEEE Transactions on Big Data

IEEE Transactions on Industrial Informatics

IEEE Transactions on Green Communications and Networking

IEEE Wireless Communications Letters

IEEE Network Magazine

IEEE Wireless Communications

IEEE Communications Magazine

ACM Computing Surveys

Computer Networks

Journal of Communications and Information Networks

International Journal of Distributed Sensor Networks

Ad Hoc & Sensor Wireless Networks

Selected Reviewers for Conference Submissions

IEEE ICC'18,'19,'20,'21 IEEE GLOBECOM'18,'19,'20,'21 IEEE ICDCS'17 IEEE WCNC'14

Others

Panelist, National Science Foundation	2019-2022
System Administrator, IEEE Transactions on Vehicular Technology	2014-2017
Reviewer, University of Florida Student Travel Grant	2017-2018

PUBLICATIONS AND PRESENTATIONS

Articles Under Review

- 1. <u>S. Puckett</u>, **J. Liu**, S. Yoo, and T. Morris, "A Secure and Efficient Protocol for LoRa Using Cryptographic Hardware Accelerators," IEEE Internet of Things Journal (IEEE IOT-J, (1st round).
- 2. **J. Liu**, S. Dong, and T. Morris, "Empirical Optimization on Post-Disaster Communication Restoration for Social Equality," IEEE Transactions on Network Science and Engineering (IEEE TNSE), (2nd round).
- 3. **J. Liu**, N. Gong, and H. Das, "Two Birds with One Stone: Differential Privacy by Low-power SRAM Memory," IEEE Transactions on Information Forensics and Security (IEEE TIFS), (2^{nd} round) .

Referred Journal Articles (underlined authors are my students)

- S. Jiang, J. Liu, Y. Liu, J. Chen, L. Wang, and Y. Zhou, "Query Integrity Meets Blockchain: A Privacy-Preserving Verification Framework for Outsourced Encrypted Data," IEEE Transactions on Services Computing (IEEE TSC), in press.
- 2. **J. Liu**, C. Zhang, K. Xue, and Y. Fang, "Privacy Preservation in Multi-Cloud Secure Data Fusion for Infectious-Disease Analysis," IEEE Transactions on Mobile Computing (IEEE TMC), in press.
- 3. K. Xue, X. Luo, Y. Ma, C. Wang, **J. Liu**, and D. Wei, "A Distributed Authentication Scheme Based on Smart Contract for Roaming Service in Mobile Vehicular Networks," IEEE Transactions on Vehicular Technology (IEEE TVT), in press.
- 4. S. Jiang, **J. Liu**, Y. Zhou, and Y. Fang, "FVC-Dedup: A Secure Report Deduplication Scheme in a Fog-assisted Vehicular Crowdsensing System," IEEE Transactions on Dependable and Secure Computing (IEEE TDSC), in press.
- 5. **J. Liu**, Y. Pang, H. Ding, Y. Cai, H. Zhang, and Y. Fang, "Optimizing IoT Energy Efficiency on Edge (EEE): a Cross-layer Design in a Cognitive Mesh Network," IEEE Transactions on Wireless Communications (IEEE TWC), vol.20, no.4, pp.2472-2486, 2021.
- 6. Y. Xing, K. Xue, Y. Zhang, J. Han, J. Li, **J. Liu**, and R. Li, "A Low-Latency MPTCP Scheduler for Live Video Streaming in Mobile Networks," IEEE Transactions on Wireless Communications (IEEE TWC), vol.20, no.11, pp.7230-7242, 2021.
- 7. P. He, K. Xue, J. Yang, Q. Xia, J. Liu, and D. Wei, "FASE: Fine-grained Accountable and Space-Efficient Access Control for Multimedia Content with In-network Caching," IEEE Transactions on Network and

- Service Management (IEEE TNSM), vol.18, no.4, pp. 4462-4475, 2021.
- 8. H. Tian, K. Xue, S. Li, J. Xu, **J. Liu**, J. Zhao, and D. Wei, "Enabling Cross-chain Transactions: A Decentralized Cryptocurrency Exchange Protocol," IEEE Transactions on Information Forensics & Security (IEEE TIFS), vol.16, pp.3928-3941, 2021.
- J. Fu, Z. Liao, J. Liu, S. Smith, and J. Wang, "Memristor Based Variation Enabled Differentially Private Learning Systems for Edge Computing in IoT," IEEE Internet of Things Journal (IEEE IoT-J), vol.8, no.12, pp. 9672-9682, 2021.
- D. Han, W. Chen, and J. Liu, "Energy-Efficient UAV Communications under Stochastic Trajectory: A
 Markov Decision Process Approach," IEEE Transactions on Green Communications and Networking (IEEE
 TGCN), vol.5, no.1, pp.106-118, 2021.
- 11. **J. Liu**, C. Zhang, B. Lorenzo, and Y. Fang, "DPavatar: A Real-Time Location Protection Framework for Incumbent Users in Cognitive Radio Networks," IEEE Transactions on Mobile Computing (IEEE TMC), vol.19, no.3, pp.552-565, 2020.
- 12. J. Li, K. Xue, J. Liu, and Y. Zhang, "A User-Centric Handover Scheme for Ultra-Dense LEO Satellite Networks," IEEE Wireless Communications Letters (IEEE WCL), vol.9, no.11, pp. 1904-1908, 2020.
- S. Jiang, J. Liu, L. Wang, Y. Zhou, Y. Fang, "ESAC: An Efficient and Secure Access Control Scheme in Vehicular Named Data Networking," IEEE Transactions on Vehicular Technology (IEEE TVT), vol.69, no.9, pp. 10252-10263, 2020.
- 14. Y. Xing, J. Han, K. Xue, J. Liu, M. Pan, and P. Hong, "MPTCP Meets Big Data: Customizing Transmission Strategy for Various Data Flows," IEEE Network (IEEE Network), vol.34, no.4, pp.35-41, 2020.
- J. Li, K. Xue, D. Wei, J. Liu, and Y. Zhang, "Energy Efficiency and Traffic Offloading Optimization in Integrated Satellite/Terrestrial Radio Access Networks," IEEE Transactions on Wireless Communications (IEEE TWC), vol.19, no.4, pp. 2367-2381, 2020.
- 16. B. Feng, C. Zhang, **J. Liu**, and Y. Fang, "Turning Waste into Wealth: Free Control Message Transmissions in Indoor WiFi Networks," IEEE Transactions on Mobile Computing (IEEE TMC), vol.19, no.10, pp.2475-2488, 2020.
- 17. J. Li, K. Xue, J. Liu, Y. Zhang, and Y. Fang, "An ICN/SDN-based Network Architecture and Efficient Content Retrieval for Future Satellite-Terrestrial Integrated Networks," IEEE Network (IEEE Network), vol.34, no.1, pp.188-195, 2020.
- 18. J. Pei, P. Hong, M. Pan, **J. Liu**, and J. Zhou, "Optimal VNF Placement via Deep Reinforcement Learning in SDN/NFV-Enabled Networks," IEEE Journal on Selected Areas in Communications (IEEE JSAC), vol.38, no.2, pp.263-278, 2020
- 19. B. Feng, C. Zhang, **J. Liu**, and Y. Fang, "D2D Communications Assisted Traffic Offloading in Integrated Cellular-WiFi Networks," IEEE Internet of Things Journal (IEEE IoT-J), vol.6, no.5, pp.8670-8680, 2019.
- Y. Li, H. Ding, L. Zhang, J. Liu, X. Fang, Y. Fang, and M. Xiao, "Machine Learning Based Handovers for Sub-6 GHz and mmWave Integrated Vehicular Networks," IEEE Transactions on Wireless Communications (IEEE TWC), vol.18, no.10, pp.4873-4885, 2019.
- 21. J. Han, Y. Li, J. Liu, and M. Zhao, "An Efficient Lucas Sequence-based Batch Auditing Scheme for the Internet of Medical Things," IEEE Access, vol.7, no.1, pp.10077-10092, 2019.
- 22. S. Jiang, X. Zhu, L. Guo, and J. Liu, "Publicly Verifiable Boolean Query Over Outsourced Encrypted Data," IEEE Transactions on Cloud Computing (IEEE TCC), vol.7, no.3, pp.799-813, 2019.
- 23. J. Liu, C. Zhang, and Y. Fang, "EPIC: A Differential Privacy Framework to Defend Smart Homes Against Internet Traffic Analysis," IEEE Internet of Things Journal (IEEE IoT-J), vol.5, no.2, pp.1206-1217, 2018.
- 24. B. Lorenzo, A. Shafigh, J. Liu, F. Gonzalez-Castano, and Y. Fang, "Data and Spectrum Trading Policies

- in a Trusted Cognitive Radio Dynamic Network Architecture," IEEE/ACM Transactions on Networking (IEEE/ACM TON), vol.26, no.3, pp.1502-1516, 2018.
- 25. H. Ding, C. Zhang, X. Li, **J. Liu**, M. Pan, Y. Fang and S. Chen, "Session-Based Cooperation in Cognitive Radio Networks: A Network-Level Approach," IEEE/ACM Transactions on Networking (IEEE/ACM TON), vol.26, no.2, pp.685-698, 2018.
- 26. Y. Pang, H. Ding, J. Liu, Y. Fang, and S. Chen, "A UHF RFID based System for Children Tracking," IEEE Internet of Things Journal (IEEE IoT-J), vol. 5, no.6, pp.5055-5064, 2018.
- 27. **J. Liu**, H. Ding, Y. Cai, H. Yue, Y. Fang, and S. Chen, "An Energy-Efficient Strategy for Secondary Users in Cooperative Cognitive Radio Networks for Green Communications," IEEE Journal on Selected Areas in Communications (IEEE JSAC), vol.34, no.12, pp.3195-3207, 2016 (IEEE TCGCC Best Journal Paper Award).
- 28. **J. Liu**, K. Song, and Y. Fan, "UWB BPF with Triple Notched bands Using Novel Dual-mode SIR and Asymmetrical Coupling Structure," Journal of ElectroMagnetic Waves and Applications (JEMWA), vol.26, no.16, pp.2112-2120, 2012.

Referred Conference Articles

- 1. Y. Jie, Y. Ren, Q. Wang, Y. Xie, C. Zhang, L. Wei, and J. Liu, and R. Zhuang, "Multi-Party Secure Computation with Intel SGX for Graph Neural Networks," IEEE International Conference on Communications (IEEE ICC'22), Seoul, South Korea, 2022.
- 2. W. Wei, J. Han, Y. Xing, K. Xue, J. Liu, and R. Zhuang, "MP-VR: An MPTCP-Based Adaptive Streaming Framework for 360-degree Virtual Reality Videos," IEEE International Conference on Communications (IEEE ICC'21), Montreal, Canada, 2021.
- 3. N. Gai, K. Xue, P. He, B. Zhu, **J. Liu**, and D. He, "An Efficient Data Aggregation Scheme with Local Differential Privacy in Smart Grid," The 16th International Conference on Mobility, Sensing and Networking (IEEE MSN'20), Tokyo, Japan, 2020 (Best Track Paper Award).
- 4. S. Jiang, J. Liu, L. Huang, H. Wu, and Y. Zhou, "Vehicular Edge Computing Meets Cache: An Access Control Scheme for Content Delivery," IEEE International Conference on Communications (IEEE ICC'20), Dublin, Ireland, 2020.
- 5. J. Qin, K. Xue, Y. Chen, W. Wei, **J. Liu**, and H. Yue, "STNDN: Link Aware Segmented Transmission for Named Data Networking," IEEE International Conference on Hot Information-Centric Networking (IEEE HotICN'19), Chongqing, China, 2019 (Best Paper Award).
- 6. Y. Chen, K. Xue, Q. Jin, W. Wei, and J. Liu, "Priority Service for Paying Content Providers through Dedicated Cache Leasing in Information-Centric Networking," IEEE International Conference on Hot Information-Centric Networking (IEEE HotICN'19), Chongqing, China, 2019.
- 7. S. Sarkar, J. Liu, and E. Jovanov, "A Robust Algorithm for Sniffing BLE Long-Lived Connections in Real-time," IEEE Global Communications Conference (IEEE GLOBECOM'19), Hawaii, USA, 2019.
- 8. Y. Xie, C. Zhang, L. Wei, Y. Niu, F. Wang, and J. Liu, "A Privacy-preserving Ethereum Lightweight Client Using PIR," IEEE/CIC International Conference on Communications in China (IEEE/CIC ICCC'19), Changchun, China, 2019.
- 9. P. He, K. Xue, J. Xu, Q. Xia, **J. Liu**, and H. Yue, "Attribute-Based Accountable Access Control For Multimedia Content With In-Network Caching," IEEE International Conference on Multimedia and Expo (IEEE ICME'19), Shanghai, China, 2019.
- 10. S. Jiang, J. Liu, L. Wang, and S. Yoo, "Verifiable Search Meets Blockchain: A Privacy-Preserving Framework for Outsourced Encrypted Data," IEEE International Conference on Communications (IEEE ICC'19), Shanghai, China, 2019.

- 11. Y. Wang, W. Hu, **J. Liu**, M. Pan, P. Zhang, and J. Lin, "An Energy-Efficient Design for Mobile UAV Fire Surveillance Networks," IEEE International Conference on Communications (IEEE ICC'19), Shanghai, China, 2019.
- 12. **J. Liu**, Y. Hu, H. Yue, Y. Gong, and Y. Fang, "A Cloud-based Secure and Privacy-Preserving Clustering Analysis of Infectious Disease," IEEE Symposium on Privacy-Aware Computing (IEEE PAC'18), Washington D.C., USA, 2018.
- 13. S. Jiang, J. Liu, M. Duan, L. Wang, and Y. Fang, "Secure and Privacy-Preserving Report De-duplication in the Fog-Based Vehicular Crowdsensing System," IEEE Global Communications Conference (IEEE GLOBECOM'18), Abu Dahbi, UAE, 2018.
- 14. S. Jiang, J. Liu, L. Wang, and Y. Fang, "A Secure Data Forwarding Scheme in Vehicular Named Data Networking," IEEE Global Communications Conference (IEEE GLOBECOM'18), Abu Dahbi, UAE, 2018.
- D. Han, W. Chen, J. Liu, and Y. Fang, "A Probabilistic Scheduling Policy for Energy Efficient UAV Communications with Delay Constraints," IEEE Global Communications Conference (IEEE GLOBECOM'18), Abu Dahbi, UAE, 2018.
- H. Zhou, Y. Niu, J. Liu, C. Zhang, L. Wei, and Y. Fang, "A Privacy-Preserving Networked Hospitality Service with the Bitcoin Blockchain," The 13th International Conference on Wireless Algorithms, Systems, and Applications (WASA'18), Tianjin, China, 2018.
- 17. K. Yang, J. Liu, C. Zhang, and Y. Fang, "Adversarial Examples Against the Deep Learning Based Network Intrusion Detection Systems," The IEEE Military Communications Conference (IEEE MILOCOM'18), Los Angeles, USA, 2018.
- 18. Y. Hu, X. Li, J. Liu, H. Ding, Y. Gong, and Y. Fang, "Mitigating Traffic Analysis Attack in Smartphones with Edge Network Assistance," IEEE International Conference on Communications (IEEE ICC'18), Kansas City, Missouri, 2018.
- 19. B. Feng, J. Liu, C. Zhang, and Y. Fang, "Communication through Symbol Silence: Towards Free Control Messages in Indoor WLANs," IEEE International Conference on Distributed Computing Systems (IEEE ICDCS'17), Atlanta, USA, 2017 (acceptance ratio: 16.9%).
- 20. Y. Niu, L. Wei, C. Zhang, J. Liu, and Y. Fang, "An Anonymous and Accountable Authentication Scheme for Wi-Fi Hotspot Access with the Bitcoin Blockchain," IEEE/CIC International Conference on Communications in China (IEEE/CIC ICCC'17), Qingdao, China, 2017.
- 21. **J. Liu**, C. Zhang, H. Ding, H. Yue, and Y. Fang, "Policy-based Privacy-Preserving Scheme for Primary Users in Database-driven Cognitive Radio Networks," IEEE Global Communications Conference (IEEE GLOBECOM'16), Washington D.C., USA, 2016.
- 22. **J. Liu**, H. Yue, H. Ding, P. Si, and Y. Fang, "An Energy Efficient Cooperative Strategy for Secondary Users in Cognitive Radio Networks," IEEE Global Communications Conference (IEEE GLOBECOM'15), San Diego, USA, 2015.
- 23. H. Ding, H. Yue, J. Liu, P. Si, and Y. Fang, "Energy-Efficient Secondary Traffic Scheduling with MIMO Beamforming," IEEE Global Communications Conference (IEEE GLOBECOM'15), San Diego, USA, 2015.
- 24. S. Jiang, X. Zhu, L. Guo, and J. Liu, "Publicly Verifiable Boolean Query Over Outsourced Encrypted Data," IEEE Global Communications Conference (IEEE GLOBECOM'15), San Diego, USA, 2015.
- 25. J. Liu, K. Song, T. Pan, J. Zha, Y. Fan, and C. Zhong, "Ultra-Wideband (UWB) Bandpass Filter with Inductance-Loaded Y-Shaped Multiple-Mode Resonator," IEEE International Workshop on Microwave & Millimeter Wave Circuits & System Technology (MMWCST'12), Chengdu, China, 2012 (Best Paper Award).

Selected Scholarly Presentations

- 1. "Secure and Efficient Dynamic Spectrum Access: From Technique to Societal Implication," Department of Electrical and Computer Engineering, University of Nebraska, Lincoln, USA, 2021.
- "Differentially Private Traffic Obfuscation on Connected Smart Homes," University of Science and Technology of China, Hefei, China, 2019.
- "A Cloud-based Secure and Privacy-Preserving Clustering Analysis of Infectious Disease," IEEE PAC, Washington D.C., USA, 2018.
- 4. "Towards Secure and Privacy-Preserving Design in CPS: A Case Study on Connected Smart Homes," Department of Electrical and Computer Engineering, Florida State University, USA, 2018.
- 5. "Communication through Symbol Silence: Towards Free Control Messages in Indoor WLANs," IEEE ICDCS, Atlanta, USA, 2017.
- 6. "Policy-based Privacy-Preserving Scheme for Primary Users in Database-driven Cognitive Radio Networks," IEEE GLOBECOM, Washington D.C., USA, 2016.