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# ROSE QINGYANG HU

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## RESEARCH INTERESTS

Next generation (5G) wireless communications and networking, Internet of Things, Cyber-physical systems, Big data and cloud/fog computing, Artificial Intelligence.

## EDUCATION

**Ph.D. in Electrical Engineering** July 1998  
University of Kansas  
Major: Telecommunications and Networks  
**Ph.D. dissertation:** Development and analysis of ABR congestion control techniques in wide area ATM networks

**M.S. in Mechanical Engineering** May 1995  
New York University Tandon School of Engineering  
Major: Control and Robotics  
**Master's thesis:** Adaptive robust  $L_1$  linear system identification and control

**B.S. in Electrical Engineering** July 1992  
University of Science and Technology of China, P.R. China  
Major: Control Theory  
**B.S. thesis:** Double inverted pendulum system control

## APPOINTMENTS

**Associate Dean for Research** Sep 1 2018 - present  
College of Engineering  
Utah State University  
Logan, UT, USA

**Full Professor** July 1 2017- present  
Department of Electrical and Computer Engineering  
Utah State University  
Logan, UT, USA

**Associate Professor (Tenured in April 2014)** Jan 2011 – June 2017  
Department of Electrical and Computer Engineering  
Utah State University  
Logan, UT, USA

**Sr. Wireless System Architect** July 2010 – Dec 2010  
Embedded Communications Group  
Intel Corporation, Dallas, TX, USA

**Senior Research Scientist**  
Research in Motion, Irving, TX, USA April 2009 – June 2010

**Manager**  
Wireless Standards and Architecture Group  
Nortel Networks, Richardson, TX, USA January 2006 – April 2009

**Senior Member of Scientific Staff** June 2004 – January 2006  
Wireless Core System Engineering  
Nortel Networks, Richardson, TX, USA

**Assistant Professor** January 2002 – May 2004  
Department of Electrical and Computer Engineering  
Mississippi State University  
Mississippi State, MS, USA

**Senior Systems Engineer** October 2000 – December 2001  
Yotta Networks, Plano, TX, USA

**Senior Member of Scientific Staff** February 1998 – October 2000  
Wireless Systems Engineering,  
Nortel Networks, Richardson, TX, USA

#### **SELECTED RESEARCH FUNDING AWARDED**

#### **Principal Investigator / Co- Principal Investigator (Total of \$2.4M personal share research funding as PI since Prof. Hu joined USU in 2011)**

- Intel Research Funding, Amount: **\$200,000**, Solo PI on project “Edge-Cloud Computing and Communications”, January 01 2018 – December 30 2019. **Awarded.**
- Intel Research Funding, Amount: **\$140,000**, Solo PI on project “5G Wireless Underlay Network Design and Performance Evaluation”, January 01 2017 – December 30 2017. **Awarded.**
- National Science Foundation, Amount: **\$308,000**, **PI** on proposal “Collaborative Research: EARS: Spectrum and Energy Efficient Radio Resource Access in Wireless Networks with Densely Deployed Underlay Devices”, September 30 2015 – August 31 2019. **Awarded.**

- National Science Foundation, Amount: **\$274,305, PI** on proposal “NeTS: Small: Collaborate Research: Scalability and Reliability for Network Communication Infrastructure in Smart Grid”, September 2014 – August 2018. **Awarded.**
- National Science Foundation, Amount: **\$205,548, PI** on proposal “ECCS: Collaborate Research: C-HetNet-Towards a Spectrum and Energy Efficiency in the Next Generation Wireless Access Network”, September 2013 – August 2017. **Awarded.**
- Utah State University Vice President Research Catalyst Funding, Amount: **\$20,000, Solo PI** on project “Radio Resource Management and Energy Efficiency in Heterogeneous Wireless Networks”, January 2012 – January 2013. **Awarded.**
- Utah State University Space grant, Amount: **\$7,800, Solo PI** on project “Security Design and Capacity Improvement of Cognitive Radio Wireless Mesh Networks”, June 2012 – January 2013. **Awarded.**
- Intel Research Funding, Amount: **\$400,000, Solo PI** on project “Next Generation Wireless Network Design and Optimization”, Sep 2013 – August 2019. **Awarded.**
- Mississippi State University Research Initial Award, Amount: **\$10,000, PI** on project “Fast failure recovery and mesh restoration analysis in an all-optical network”, Jan 2003 – Dec 2003. **Awarded.**
- Mississippi Department of Transportation, Amount: **\$48,000, Co-PI** on project “Implementation of a Real-Time Intersection Accident Detection System”, January 2003-January 2004. **Awarded.**

## PUBLICATIONS

### **Books/Book Chapters**

1. Feng Ye, Yi Qian, **Rose Qingyang Hu**, “Smart Grid Communication Infrastructures - Big Data, Cloud Computing, And Security”, published by *IEEE Press and Wiley* 2018.
2. **Rose Qingyang Hu** and Yi Qian, *5G Wireless Communications and Networks*, in progress, to be published by John Wiley & Sons, Ltd.
3. Feng Ye, Yi Qian, **Rose Qingyang Hu**, *Smart Grid Communication Infrastructures*, in progress, to be published by John Wiley and Sons, Ltd.
4. **Rose Qingyang Hu**, Yi Qian, *Resource Management for Heterogeneous Networks in LTE System*, Springer Briefs in Electrical and Computer Engineering, Springer 2014, ISBN 978-1-4939-0371-9.
5. **Rose Qingyang Hu** and Yi Qian, *Heterogeneous Cellular Networks*, John Wiley & Sons, Ltd., 2013.
6. **Rose Qingyang Hu** and Yi Qian, “Requirements and Challenges on Cybersecurity for Smart Grid Communication Infrastructures”, in *Security and Privacy in Smart Grids*, Edited by Yang Xiao, CRC Press, 2013.

7. **Rose Qingyang Hu** and Yi Qian, “Case Studies and the Lessons Learned from the Recent Smart Grid Field Trials”, in *Smart Grid Communications and Networking*, Edited by H. Vincent Poor, Zhu Han and Ekram Hossain, Cambridge University Press, 2012.
8. Geng Wu, **Rose Qingyang Hu**, Tony Saboorian, “Wireless Real-Time Networking”, in *Real-Time Networked Computing Technologies*, published by Nortel Press 2009.
9. **Rose Qingyang Hu**, D. Paranchych, Mo-Han Fong, Geng Wu, “Handoff Management with Network Architecture Evolution in IEEE Broadband Wireless Mobility Networks”, in *WiMax/MobileFi: Advanced Research and Technology*, Auerbach Publications, 2008.

### Journal Articles

1. Fuhui Zhou, Yongpeng Wu, **Rose Qingyang Hu**, Yi Qian, “Machine Learning Based Resource Allocation for Smart IoT: Frameworks, Challenges and Open Issues”, submitted to *IEEE Communications Magazine*, 2018.
2. Le Thanh Tan, **Rose Qingyang Hu**, and Lajos Hanzo, “Twin-Timescale Artificial Intelligence Aided Mobility-Aware Edge Caching and Computing in Vehicular Networks”, submitted to *IEEE Transactions on Vehicular Technology* 2018.
3. Haijian Sun, Fuhui Zhou, **Rose Qingyang Hu**, “Joint Offloading and Computation Energy Efficiency Maximization in a Mobile Edge Computing System”, submitted to *IEEE Transactions on Vehicular Technology* 2018.
4. Lingxia Wang, Chungang Yang, **Rose Qingyang Hu**, “Autonomous Traffic Offloading in Heterogeneous Ultra-Dense Networks Using Machine Learning”, submitted to *IEEE Wireless Communications Magazine* 2018.
5. Le Thanh Tan, **Rose Qingyang Hu**, Lajos Hanzo, “Wireless Heterogeneous Networks with Full-Duplex Relays and Mobility-Aware Probabilistic Caching”, submitted to *IEEE Transactions on Communications* 2018.
6. Fuhui Zhou, Rose Qingyang Hu, Zan Li, Yuhao Wang, “UAV-Enabled Mobile Edge Computing Networks: Recent Advances, Implementations, and Challenges”, submitted to *IEEE Communications Magazine* 2018.
7. Lifang Feng, **Rose Qingyang Hu**, Jianping Wang, Peng Xu, Yi Qian, “Deployment Issues and Performance Study in a Relay-Assisted Indoor VLC Systems”, submitted to *IEEE Systems Journal*, 2018.
8. Le Thanh Tan, **Rose Qingyang Hu**, “Mobility-Aware Edge Caching and Computing Framework in Vehicle Networks: A Deep Reinforcement Learning”, accepted to *IEEE Transactions on Vehicular Technology* 2018.
9. Boyang Liu, Fuhui Zhou, Guangyue Lu, **Rose Qingyang Hu**, “Energy Efficient and Robust Beamforming for MISO Cognitive Small Cell Networks”, accepted to *IEEE Internet of Things Journal* 2018.
10. Fuhui Zhou, Yongpeng Wu, **Rose Qingyang Hu**, Yi Qian, “Computation Rate Maximization in UAV-Enabled Wireless Powered Mobile-Edge Computing Systems”, accepted to *IEEE Journal of Selected Areas in Communications* 2018.

11. Haijian Sun, Fuhui Zhou, **Rose Qingyang Hu**, Lajos Hanzo, “Robust Beamforming Design in a NOMA Cognitive Radio Network with SWIPT”, accepted to *IEEE Journal of Selected Areas in Communications* 2018.
12. Zekun Zhang, **Rose Qingyang Hu**, “Dense Cellular Network Analysis with LoS/NLoS Propagation and Bounded Path Loss Model”, to appear in *IEEE Communications Letter* 2018.
13. Le Thanh Tan, **Rose Qingyang Hu**, Yi Qian, “D2D Communications in Heterogeneous Networks with Full-Duplex Relays and Edge Caching”, to appear in *IEEE Transactions on Industry Applications* 2018.
14. Yinghui Ye, Yongzhao Li, Dan Wang, Fuhui Zhou, **Rose Qingyang Hu**, Hailin Zhang, “Optimal Transmission Schemes for DF Relaying Networks Using SWIPT”, to appear in *IEEE Transactions on Vehicular Technology* 2017.
15. Xiaohui Qi, Bin Li, Fuhui Zhou, Kaizhi Huang, **Rose Qingyang Hu**, “Enhancing Physical Layer Security for Cooperative Non-Orthogonal Multiple Access in Primary Networks”, submitted to *IEEE Transactions on Vehicular Technology* 2017.
16. Haijian Sun, Zekun Zhang, **Rose Qingyang Hu**, Yi Qian, “Challenges and Enabling Technologies in 5G Wearable Communications”, to appear in *IEEE Vehicular Technology Magazine* 2018.
17. Feng Ye, Yi Qian, **Rose Qingyang Hu**, “Smart Service-Aware Wireless Mixed-Area Networks”, accepted to *IEEE Network Magazine* 2018.
18. Dongfeng Fang, Yi Qian, **Rose Qingyang Hu**, “On 5G Mobile Wireless Network Security”, *IEEE Access* 2018.
19. Fuhui Zhou, Zheng Chu, Haijian Sun, **Rose Qingyang Hu**, Lajos Hanzo, “Artificial Noise Aided Beamforming for Cooperative MISO-NOMA CRNs with SWIPT”, *IEEE Journal of Selected Areas in Communications* 2018.
20. Zheng Chu, Fuhui Zhou, Zhengyu Zhu, **Rose Qingyang Hu**, and Pei Xiao, “Wireless Powered Sensor Networks for Internet of Things: Maximum Throughput and Optimal Power Allocation”, accepted to *IEEE Internet of Things Journal* 2018.
21. Fuhui Zhou, Yongpeng Wu, Member, **Rose Qingyang Hu**, Yuhao Wang, Kai-Kit Wong, “Energy-Efficient NOMA Heterogeneous Cloud Radio Access Networks: Enabling Techniques and Challenges”, *IEEE Network Magazine* 2018.
22. Lifang Feng, Hongbing Yang, **Rose Qingyang Hu**, Jianping Wang, “mmWave and VLC based Indoor Channel Models in 5G Wireless Networks”, to appear in *IEEE Wireless Communications Magazine* 2018.
23. Zekun Zhang, Haijian Sun, **Rose Qingyang Hu**, “Downlink and Uplink Non-Orthogonal Multiple Access in a Dense Wireless Network”, *IEEE Journal of Selected Areas in Communications* 2017.
24. Bei Xie, Zekun Zhang, **Rose Qingyang Hu**, Geng Wu, “Joint Spectral Efficiency and Energy Efficiency in FFR based Wireless Heterogeneous Networks”, *IEEE Transactions on Vehicular Technology*, 2017.

25. Chongyu Niu, Yibing Li, **Rose Qingyang Hu**, Fang Ye, "Fast and Efficient Radio Resource Allocation in Dynamic Ultra-Dense Heterogeneous Networks", *IEEE Access*, Vol.5, pp. 1911-1924, 2017.
26. Chongyu Niu, Yibing Li, **Rose Qingyang Hu**, Fang Ye, "A Femtocell Enhanced Multi-Target Spectrum Allocation Strategy in LTE-A HetNets", *IET Communications*, Vol.11, No.6, pp. 887-896, 2017.
27. Dan Deng, Lisheng Fan, Xutao Li, Wen Zhou, **Rose Qingyang Hu**, "Secrecy Analysis of Multiuser Untrusted Amplify-and-Forward Relay Networks", *Wireless Communications and Mobile Computing* 2017.
28. Feng Ye, Yi Qian, **Rose Qingyang Hu**, "Incentive Load Scheduling Schemes for PHEV Battery Exchange Stations in Smart Grid", *IEEE Systems Journal*, Vol. 11, No. 2, June 2017.
29. Chungang Yang, Jiandong Li, **Rose Qingyang Hu**, Jia Xiao, "Distributed Optimal Cooperation for Spectral and Energy Efficiency in Hyper-Dense Small Cell Networks", *IEEE Wireless Communications Magazine*. June 2017.
30. Yibing Li., Chongyu Niu, Fang Ye, **Rose Qingyang Hu**, "A Universal Frequency Reuse Scheme in LTE-A Heterogeneous Networks", *Wireless Communications and Mobile Computing* 2016.
31. Jiazhen Zhou, Jennifer Fox, **Rose Qingyang Hu** and Yi Qian, "Scaling of On-Demand Broadcast Scheduling in Stressed Networks", *IEEE Transactions on Communications*, Vol. 64, No. 8, 2016.
32. Lifang Feng, **Rose Qiangyang Hu**, Jianping Wang, Peng Xu, and Yi Qian, "VLC in 5G Wireless Networks: Architecture and Key Technologies", *IEEE Network Magazine*, November 2016.
33. Yiran Xu, **Rose Qingyang Hu**, Yi Qian, Ty Znati, "Quality-based Spectrum and Energy Efficient Mobile Association in Wireless Heterogeneous Networks", *IEEE Transactions on Communications*, Vol.64, No.2, pp.805-817, 2016.
34. Feng Ye, Yi Qian, **Rose Qingyang Hu**, "A Real-Time Information Based Demand-Side Management System in Smart Grid", *IEEE Transactions on Parallel and Distributed Systems*, Vol.27, No.2, pp.329-339, 2016.
35. Haijun Zhang, Chunxiao Jiang, **Rose Qingyang Hu**, Yi Qian, "Self-Organization in Disaster Resilient Heterogeneous Small Cell Networks", *IEEE Network Magazine*, Vol.30, No. 2, pp.116-121, 2016.
36. Xianfu Lei, **Rose Qingyang Hu**, Lisheng Fan, Pingzhi Fan, and Trung Q. Duong, "Performance Analysis of Switch-and-Stay Combining in Two-Way Relay Systems with ANC and TDBC Protocols", *Wireless Communications and Mobile Computing*, Vol.16, No.6, pp.624-642, 2016.
37. Xianfu Lei, **Rose Qingyang Hu**, Lisheng Fan, Geng Wu, "Opportunistic Source Scheduling in Multi-Source Two-way Relay Networks", *Wireless Communications and Mobile Computing*, Vol.16, No.4, pp.459-468, 2016.

38. Dan Deng, Lisheng Fan, Rui Zhao, and **Rose Qingyang Hu**, “Secure Communications in Multiple Amplify-and-Forward Relay Networks with Outdated Channel State Information”, *Transactions on Emerging Telecommunications Technologies*, Vol.27, No.4, 2016.
39. Aiqing Zhang, Liang Zhou, **Rose Qingyang Hu**, and Yi Qian, “SeDS: Secure Data Sharing Strategy for D2D Communication in LTE-Advanced Networks”, *IEEE Transactions on Vehicular Technology*, Vol.65, No.4, pp.2659-2672, 2016.
40. Lili Wei, **Rose Qingyang Hu**, Yi Qian, Geng Wu, “Energy-Efficiency and Spectrum-Efficiency of Multi-hop Device-to-Device Communications Underlying Cellular Network”, *IEEE Transactions on Vehicular Technology*, Vol.65, No.1, pp.367-380, 2016.
41. Songlin Sun, Bo Rong, **Rose Qingyang Hu**, and Yi Qian, “Spatial Domain Management and Massive MIMO Coordination in 5G SDN”, *IEEE Access Journal*, No.3, pp.2238-2251, 2015.
42. Shengjie Xu, Yi Qian, **Rose Qingyang Hu**, “On Reliability of Smart Grid Neighborhood Area Networks”, *IEEE Access Journal*, No.3, pp.2352-2365, 2015.
43. Lifang Feng, **Rose Qingyang Hu**, Jianping Wang, Peng Xu, “Fountain code-based error control scheme for dimmable visible light communication systems”, *Optics Communications*, Vol.347, pp.20–24, 2015.
44. Lifang Feng, Jianping Wang, Rose Hu, Li Liu, “New design of optical zero correlation zone codes in quasi-synchronous VLC CDMA systems”, *EURASIP Journal on Wireless Communications and Networking* 2015: 120, 2015.
45. Zhicheng Dong, Pingzhi Fan, **Rose Qingyang Hu**, Jake Gunther, Xianfu Lei, “On the Spectral Efficiency of Rate and Subcarrier Bandwidth Adaptive OFDM Systems over Very Fast Fading Channels”, *IEEE Transactions on Vehicular Technology* 10.1109/TVT.2015.2472989, 2015.
46. Dan Wu, Yueming Cai, **Rose Qingyang Hu**, and Yi Qian, “Dynamic Distributed Resource Sharing for Mobile D2D Communications”, *IEEE Transactions on Wireless Communications*, Vol.4, No.10, pp.5417-5429, 2015.
47. Xue Chen, **Rose Qingyang Hu**, Geng Wu, Qian Clara Li, “Tradeoff Between Energy Efficiency and Spectral Efficiency in a Delay Constrained Wireless System”, *Wireless Communications and Mobile Computing*, Vol.15, No.5, pp.1945–1956, 2015.
48. Feng Ye, Yi Qian, **Rose Qingyang Hu**, Yi Qian, Sajal K. Das, “Reliable Energy Efficient Uplink Transmission for Neighborhood Area Networks in Smart Grid”, *IEEE Transactions on Smart Grid*, Vol. 6, No. 5, pp.2179-2188, 2015.
49. Xian Wang, Keqin Li, Ray-Guang Cheng, Pingzhi Fan, Xianfu Lei, and **Rose Qingyang Hu**, “Cost Analysis of a Hybrid Movement- and Time-Based Location Update Scheme in Cellular Networks”, *IEEE Transactions on Vehicular Technology*, Vol.64, No.11, pp.5314-5326, 2015.
50. Qian Li, **Rose Qingyang Hu**, Geng Wu, “Mobile Association for Wireless Heterogeneous Networks with Cooperative Relays: Optimal Framework and Implementation Schemes”, *Telecommunications Systems*, Vol.6, No.1, pp.17-27, 2015.

51. Lili Wei, D. A. Pados, S. N. Batalama, **Rose Qingyang Hu** and M. J. Medley, "Optimal multiuser spread-spectrum data hiding in digital images", *Journal of Security and Communication Networks*, Vol.8, No.4, pp.540-549, 2015.
52. Feng Ye, Yi Qian, **Rose Qingyang Hu**, "Energy Efficient Self-Sustaining Wireless Neighborhood Area Network Design for Smart Grid", *IEEE Transactions on Smart Grid*, Vol.6, No.1, pp.220-229, 2015.
53. Lili Wei, **Rose Qingyang Hu**, Yi Qian, Geng Wu, "Key Elements to Enable Millimeter Wave Communications for 5G Wireless Systems", *IEEE Wireless Communications Magazine*, Vol. 21, No. 6, pp.136-143, 2014.
54. Dan Wu, Yueming Cai, Liang Zhou, **Rose Qingyang Hu**, and Yi Qian, "Energy-aware Dynamic Cooperative Strategy Selection for Relay-assisted Cellular Networks: An Evolutionary Game Approach", *IEEE Transactions on Vehicular Technology*, Vol. 63, No. 9, pp.4659-4669, 2014.
55. Xian Wang, Xianfu Lei, Pingzhi Fan, **Rose Qingyang Hu**, Shi-Jinn Horng, "Cost Analysis of Movement-Based Location Management in PCS Networks: An Embedded Markov Chain Approach", *IEEE Transactions on Vehicular Technology*, Vol.63, No.4, pp.1886-1902, October 2014.
56. Lisheng Fan, Xianfu Lei, Trung Q. Duong, **Rose Qingyang Hu**, Maged ElKashlan, "Multiuser Cognitive Relay Networks: Joint Impact of Direct and Relay Communications", *IEEE Transactions on Wireless Communications*, Vol. 13, No. 9, pp.5043-5055, September 2014.
57. Dan Wu, Jinlong Wang, **Rose Qingyang Hu**, Yueming Cai, Liang Zhou, "Energy-Efficient Resource Sharing for Mobile Device-to-Device Multimedia Communications", *IEEE Transactions on Vehicular Technology*, Vol.63, No.5, pp.2093-2103, June 2014.
58. Lili Wei, **Rose Qingyang Hu**, Yi Qian, Geng Wu, "Enabling Device-to-Device Communications Underlying Cellular Networks: Challenges and Research Aspects", *IEEE Communications Magazine*, Vol.52, No.6, pp.90-96, June 2014.
59. **Rose Qingyang Hu** and Yi Qian, "An Energy Efficient and Spectrum Efficient Wireless Heterogeneous Network Framework for 5G Systems", *IEEE Communications Magazine*, Vol.52, No.5, pp.94-101, May 2014.
60. Bo Liu, Bo Rong, **Rose Qingyang Hu**, Yi Qian. "Neighbor Discovery Algorithms in Directional Antenna based Synchronous and Asynchronous Wireless Ad Hoc Networks", *IEEE Wireless Communications Magazine*, Vol.20, No.6, pp.106-112, December 2013.
61. Dan Wu, Liang Zhou, Yueming Cai, **Rose Qingyang Hu**, Yi Qian, "The role of mobility for D2D communications in LTE-advanced networks: energy vs. bandwidth efficiency", *IEEE Wireless Communications Magazine*, Vol.21, No.2, pp.66-71, May 2014.
62. Hui Guo, **Rose Qingyang Hu**, Kejie Lu, Yi Qian, "Backbone Construction with Relay Node Placement for Energy-efficient Wireless Sensor Networks", *Wireless Communications and Mobile Computing*, Vol.14, No.9, pp.922-936, 2014.
63. Lisheng Fan, Xianfu Lei, **Rose Qingyang Hu**, Winston Seah, "Outdated Relay Selection in Two-Way Relay Network", *IEEE Transactions on Vehicular Technology*, Vol.62, No.8, pp.4051-4057, 2014.



64. Jiazhen Zhou, Sankardas Roy, Jiang Li, **Rose Qingyang Hu**, Yi Qian, “Minimizing the Average Delay of Messages in Pigeon Networks”, *IEEE Transactions on Communications*, Vol.61, No.8, pp. 3349-3361, 2013.
65. Lisheng Fan, Xianfu Lei, **Rose Qingyang Hu**, and Shengli Zhang, “Distributed Two-way Switch and Stay Combining with a Single Amplify-and-forward Relay”, *IEEE Wireless Communications Letters*, Vol.2, No.4, August 2013.
66. Jiazhen Zhou, **Rose Qingyang Hu**, Yi Qian, “A Scalable Vehicular Network Architecture for Traffic Information Sharing”, *IEEE Journal on Selected Areas in Communications* Vol.31, No.5, pp.981-991, July 2013.
67. Ye Yan, **Rose Qingyang Hu**, Sajal K. Das, Yi Qian, “A Security Protocol for Advanced Metering Infrastructure in Smart Grid”, *IEEE Network*, Vol.27, No.4, pp. 64-71, August 2013.
68. Qian (Clara) Li, **Rose Qingyang Hu**, Yiran Xu, Yi Qian, “Optimal Fractional Frequency Reuse and Power control in the Heterogeneous Wireless Networks”, *IEEE Transactions on Wireless Communications* Vol.12, No.6, pp.2658-2668, May 2013.
69. Qian (Clara) Li, **Rose Qingyang Hu**, Yi Qian, Geng Wu, “Intra-cell Cooperation and Resource Allocation in a Heterogeneous Network with Relays”, *IEEE Transactions on Vehicular Technology* Vol.62, No.4, pp.1770-1784, May 2013.
70. Liang Zhou, **Rose Qingyang Hu**, Yi Qian, Hsiao-Hwa Chen, “Energy-Spectrum Efficiency Tradeoff for Video Streaming over Mobile Ad Hoc Networks”, *IEEE Journal on Selected Areas in Communications*, Vol.31, No.5, pp.981-991, May 2013.
71. Junfeng Xiao, **Rose Qingyang Hu**, Yi Qian, Lei Gong, Bo Wang, “Expand LTE Network Spectrum with Cognitive Radios -- From Research to Implementation”, *IEEE Wireless Communications Magazine*, Vol.20, No.2, pp.12-19, April 2013.
72. Hui Guo, Jiang Li, **Rose Qingyang Hu**, and Yi Qian, “HoPM: Multiple Pigeon-assisted Delivery in Delay Tolerant Networks”, *Wireless Communications and Mobile Computing and Mobile Computing*, Vol.13, No.8, pp.719–733, June 2013.
73. Xianfu Lei, Lisheng Fan, Diomidis S. Michalopoulos, Pingzhi Fan, and **Rose Qingyang Hu**, “Outage Probability of TDBC Protocol in Multiuser Two-way Relay Systems with Nakagami-m Fading”, *IEEE Communications Letters*, Vol.17, No.3, pp.487-490, March 2013.
74. Christian Kocks, Alexander Viessmann, Peter Jung, Lei Chen, Qiu Jing, **Rose Qingyang Hu**, “On Spectrum Sensing for TV White Space in China”, *Journal of Computer Networks and Communications*, 2012.
75. Qian (Clara) Li, **Rose Qingyang Hu**, Yi Qian, Geng Wu, “Cooperative Communication for Wireless Networks: Techniques and Applications in LTE-Advanced Systems”, *IEEE Wireless Communications Magazine*, Vol.19, No.2, pp.22 - 29, April 2012.
76. Jiazhen Zhou, **Rose Qingyang Hu**, and Yi Qian, “Scalable Distributed Communication Architectures to Support Advanced Metering Infrastructure in Smart Grid”, *IEEE Transactions on Parallel and Distributed Systems*, Vol. 23, No.9, pp.1632-1642, 2012.

77. Lisheng Fan, Xianfu Lei, Pingzhi Fan, **Rose Qingyang Hu**, "Outage Probability Analysis and Power Allocation for Two-way Relay Networks with User Selection and Outdated Channel State Information", *IEEE Communications Letters*, Vol.16, No.5, pp.638-641, 2012.
78. Yi Yu, **Rose Qingyang Hu**, Chandra Bontu, Zhijun Cai, "Mobile Association and Load balancing in a Cooperative Relay Enabled Cellular Network", *IEEE Communications Magazines*, Vol.49, No.5, pp.83-89, May 2011.
79. Bo Rong, **Rose Qingyang Hu**, Wei Li, and Yi Qian, "Traffic-aware downlink power allocation in multiuser OFDM system", *International Journal of Communication Systems*, Vol.21, No.9, pp.1136-1149, September 2011.
80. Bo Rong, Yi Qian, Kejie Lu, **Rose Qingyang Hu**, and Michel Kadoch, "Multipath Routing over Wireless Mesh Networks for Multiple Description Video Transmission", *IEEE Journal on Selected Areas in Communications* Vol.28, No.3, pp. 321-331, 2010.
81. Bo Rong, Yi Qian, Kejie Lu, **Rose Qingyang Hu**, and Michel Kadoch, "Mobile Agent Based Handoff in Wireless Mesh Networks: Architecture and Call Admission Control", *IEEE Transactions on Vehicular Technology*, Vol.58, No.8, pp.4565 – 4575, October 2009.
82. **Rose Qingyang Hu**, Weiwei Hu, Mingzhou Jin, and Yi Qian, "Wavelength Retuning without Service Interruption in an All-Optical Survivable Network", *International Journal of Communication Systems*, Vol.22, No.6, pp.719-738, June 2009.
83. Bo Rong, Hsiao-Hwa Chen, Yi Qian, Kejie Lu, **Rose Qingyang Hu**, and Sghaier Guizani, "A Pyramidal Security Model for Large-Scale Group-Oriented Computing in Mobile Ad Hoc Networks: The Key Management Study", *IEEE Transactions on Vehicular Technology*, Vol.58, No.1, pp.398-408, January 2009.
84. Weiwei Hu, **Rose Qingyang Hu**, and Yi Qian "Survivable Traffic Grooming With Non-service Interruptive Wavelength Retuning in a WDM Mesh Network", *International Journal of Communication Systems*, Vol.21, No.8, pp.889-900, August 2008.
85. Bo Rong, Yi Qian, Kejie Lu, and **Rose Qingyang Hu**, "Enhanced QoS Multicast Routing in Wireless Mesh Networks", *IEEE Transactions on Wireless Communications*, Vol.7, No.6, pp.2119-2130, June 2008.
86. M. Selvaraj, G.Y. Lazarou, and **Rose Qingyang Hu**, "Simultaneous and Proportional Bandwidth, Delay and Loss Differentiation", *International Journal of Computers and Applications*, 2008.
87. **Rose Qingyang Hu**, Yi Qian, Yu Cheng, and Sastri Kota, "Cross-Layer Design for Call Admission Control of a High Capacity GEO Satellite Network with On-Board Cross-Connect", *International Journal of Satellite Communications and Networking*, Vol.24, No.6, pp.455-470, November-December 2006.
88. Yu Cheng, Wei Song, Weihua Zhuang, Alberto Leon-Garcia, **Rose Qingyang Hu**, "Efficient Resource Allocation for SLA Based Wireless/Wireline Interworking", *ACM/Kluwer Journal of Mobile Networks and Applications (MONET)*, Vol.11, pp.661-679, Number 5 / October, 2006.
89. Yi Qian, **Rose Qingyang Hu**, Hsiao-Hwa Chen, "A Call Admission Control Framework for Voice Over WLANs", *IEEE Wireless Communications Magazine*, Vol.13, No1, pp.44.-50, February 2006.

90. Mingzhou Jin, **Rose Qingyang Hu**, Joyce Zhang, Weiwei Hu, “Analytical Models and Performance Evaluation on Wavelength Rearrangement in a Mesh-Restored All-Optical Network”, *IEEE Communications Letters*, Vol.10, No.2, pp.111-113, February 2006.
91. Yi Qian, **Rose Qingyang Hu**, Catherine Rosenberg, “Integrated Connection Admission Control and Bandwidth on Demand Algorithm for a Satellite Network with Heterogeneous Traffic”, *IEICE Transactions on Communications*, Vol.E89-B, No.3, pp.895-905, March 2006.
92. **Rose Qingyang Hu**, Bob Best, Yi Qian, and Mingzhou Jin, “A Scheduling Algorithm in a Core Optical Router with Heterogeneous Traffic”, *International Journal of Wireless and Optical Communications*, Vol.3, No.1, pp.1-22, April 2006.
93. **Rose Qingyang Hu**, D. Petr, “Predictive self-tuning fuzzy logic feedback rate controller”, *IEEE/ACM Transactions on Networking*, Vol.8, No.6, pp.697-709, December 2000.

### Refereed Conference Papers

1. Dongfeng Fang, Yi Qian, **Rose Qingyang Hu**, “Secure and Efficient Mobility Management over SDN-based 5G Wireless Networks”, submitted to *IEEE Infocom* 2019.
2. Qun Wang, Tan Thanh Le, **Rose Qingyang Hu**, Geng Wu, Weixiao Meng, “Hierarchical Collaborative Cloud and Fog Computing in IoT Networks”, submitted to *WCSP* 2018.
3. Xiaodong Liu, Yuhao Wang, Fuhui Zhou, **Rose Qingyang Hu**, “BER Analysis for NOMA-Enabled Visible Light Communication Systems with M-PSK”, submitted to *WCSP* 2018.
4. Shakil Ahmed, Tan Thanh Le, Fuhui Zhou, **Rose Qingyang Hu**, “Trajectory Optimization for Energy Efficient Aerial Base Station-aided Emergency Wireless Networks”, submitted to *WCSP* 2018.
5. Liqin Shi, Wenchi Cheng, Yinghui Ye, Hailin Zhang, and **Rose Qingyang Hu**, “Heterogeneous Power-Splitting Based Two-Way DF Relaying with Non-Linear Energy Harvesting”, accepted to *IEEE Globecom* 2018.
6. Fuhui Zhou, Haijian Sun, Zheng Chu, and **Rose Qingyang Hu**, “Computation Efficiency Maximization for Wireless-Powered Mobile Edge Computing”, accepted to *IEEE Globecom* 2018.
7. Shengjie Xu, Yi Qian, **Rose Qingyang Hu**, “Privacy-Preserving Data Preprocessing for Fog Computing in 5G Network Security”, accepted to *IEEE Globecom* 2018.
8. Fuhui Zhou, Xiongjian Zhang, **Rose Qingyang Hu**, Apostolos Papanthanasios, Weixiao Meng, “Resource Allocation Based on Deep Neural Networks for Cognitive Radio Networks”, accepted to *IEEE CIC/ICC* 2018.
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#### **INVITED TALKS**

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28. Method for dynamically computing a switching schedule, US Patent 7,106,697, issued on September 12, 2006.
29. Method and Apparatus for Scheduling Call Admission Control in Satellite and Wireless Networks, United States Patent 6,738,363, issued on May 18, 2004.

#### **INDUSTRY EXPERIENCE**

##### **07/2010 – 12/2010 Senior Wireless System Architect / Senior Manager, Embedded Communications Group, Intel Corporation, Dallas, Texas 75039**

- Led Intel next generation cloud and cooperative wireless base station architecture design and performance evaluation.
- Successfully defined the software defined radio base station prototype for evaluation and implementation.

##### **04/2009 – 06/2010 Senior Research Scientist, Advanced Technology, Research in Motion, 5000 Riverside Drive. Irving, Texas 75039**

- Project leader of RIM LTE-A mobility development and evaluation. Leading inventor for 16 patents in the areas of relay handover, relay cell selection, radio link failure protection with CoMP.
- Contributed to RIM LTE-A downlink and uplink self-evaluation in 3GPP standards meetings.
- Actively participated and contributed to 3GPP LTE (Long Term Evaluation) air interface standards development in the areas of LTE-A relay/CoMP handover and cell selection.
- Leading author for two IEEE conference paper submissions and one IEEE transaction paper preparation.

##### **01/2006 - 04/2009 Manager, Carrier Networks Access Standards and Architecture, Nortel, 2221 Lakeside Boulevard, Richardson, TX, 75082**

- Actively participated in industrial 3GPP/3GPP2/IEEE 4G wireless technology air interface standards development. Nortel prime on IEEE 802.20 standards.
- 4 patents pending, 2 book chapters and 2 IEEE conference papers published.
- Nortel leader for 4G (LTE/WiMAX) system level simulation. Manage multi-site, cross organization teams (US Canada, China) to develop 4G system level simulators and provide key

performance and design recommendations to customers (RFI/RFP), standards and product teams.

- Successfully created a system level simulation platform which delivered 80% of required results for LTE/SAE and WiMAX design teams and customers. This platform is extensively used for business case analysis, feature prioritization. It also provided inputs to RF planning tools.
- Primed cross 3G/4G technology and performance comparison between LTE, WiMAX, UMB. Nortel lead on customer interaction including Verizon Wireless, TMO; and various industry consortiums including CDG, NGMN, 3G Americas.
- Guided a team of engineers in a number of customer and market focused studies, including the effectiveness of Fractional Frequency Reuse (FFR) schemes on sector throughput and cell-edge coverage for single-carrier deployment scenarios, Verizon's 700MHz UL PUCCH solution, LTE protocol layer interaction, VoIP and VT capacity, LTE radio link failure, etc.

**06/2004– 01/2006 Senior Member of Scientific Staff, Wireless Core System Engineering, Nortel, 2221 Lakeside Boulevard, Richardson, TX, 75082**

- Prime member on Nortel CDMA Wireless Priority Service (WPS) end-to-end overload control performance evaluation and simulation, WPS capacity/memory/delay impact analysis, interaction with the design team on solving the critical design issues. Nortel Wireless Priority Service simulation project was ranked as the best simulation delivery among all vendors by Verizon.
- Primed on simulation and performance studies for Nortel 1xRTT CDMA Signaling Subsystems by using OPNET stimulation and stochastic process tools.
- Primed on capacity analysis on multiple paging channels and its impact on Nortel MTX13 Core subsystems.

**10/2000 – 01/2002 Senior Systems Engineer, Yotta Networks, Inc., Plano, Texas, 75082**

- First systems engineer in the start-up company; independently delivered the POC simulation work that was demonstrated to the VCs who supported the company's the first round founding.
- 4 US patents awarded and 3 papers published. Helped expand the systems engineering team from 1 to 6 people.
- Primed on Yotta core switch reliability analysis, mesh restoration and protection algorithms development, scheduling and routing algorithms development.
- Led simulation and modeling on Internet self similar traffic, switch architecture, scheduling, routing protocols, call admission control.

**02/1998 – 10/2000 Senior Member of Scientific Staff, Nortel Networks, 2201 Lakeside Boulevard, Richardson, TX, 75082**

- Among very first few OPNET users at Nortel Richardson. 1 US patent awarded and 10 papers based on my simulation work.
- Award of Excellence from Nortel and distinguished paper award from OPNET. Ranked "Top Contributor" in Nortel each year consecutively.



- Worked extensively on multi-media GEO satellite technology development in the areas of TCP/IP over satellite, call admission control and bandwidth on demand, scheduling, QoS.
- Led modeling, simulation and performance evaluation on routing, cross-connectivity bandwidth management and scheduling schemes in multi-beam multimedia satellite networks.
- Led modeling and simulation activities for CDMA2000 1xRTT project. Evaluated the engineering limit and delay/PER performance for BTS, BSC and MSC.

### **TEACHING EXPERIENCE**

#### **At Utah State University**

- ECE 7930: Advanced Topics in Wireless Networks (Fall 2012, Fall 2013, Fall 2014, Fall 2016, Fall 2017)
- ECE 6600: Wireless and Mobile Networks (Spring 2012, Spring 2013, Spring 2014, Spring 2015, Spring 2016, Spring 2017, Spring 2018)
- ECE 6010: Stochastic Process in Electrical Engineering (Fall 2014)
- ECE 5600: Data Communications and Computer Networks (Fall 2011, Fall 2012, Fall 2013), Fall 2014, Fall 2015, Fall 2016, Fall 2017)
- ECE 2700: Digital Circuit Design (Spring 2011)

#### **Initiated and taught the following courses at Mississippi State University**

- ECE 8990: Wireless Communications and Networks (1 time)
- ECE 8990: Advanced Computer Networks Performance Evaluations (1 time)

#### **Taught the following courses at Mississippi State University**

- ECE 8990: Random Signals and Processes (2 times)
- ECE 3163: Signals and Systems (1 time)
- ECE 3144: Circuit Analysis I (3 times)

### **STUDENT ADVISING: COMMITTEES AND INDEPENDENT STUDIES**

#### **Post-doctoral mentoring**

- Dr. Xianfu Lei, “Energy efficiency in wireless networks”, December 2012 – December 2014.
- Dr. Lili Wei, “Multimedia communications in 5G wireless networks”, Feb 2013 – June 2014. Now with Intel as Senior Research Scientist.
- Dr. Qian (Clara) Li, “Cooperative and Cognitive wireless network design and optimization”, June 2011 – September 2012. Now with Intel as a Senior Research Scientist.
- Dr. Bei Xie, “mmWave in 5G wireless networks”, January 2015 – present.

## Doctoral Dissertation Committees

### *Chair (Ph.D. in EE):*

- Yiran Xu, “Multimedia QoS/QoE in the next generation wireless networks”, graduated in December 2015, Utah State University.
- Xue Chen, “Energy efficiency in the next generation wireless networks”, graduated in December 2015, Utah State University.
- Zack Zekun Zhang, “Device to Device Communications in 5G Wireless Networks”, Sep 2013 -, Utah State University
- Haijian Sun, “NOMA with precoding in 5G wireless Networks”, Sep 2014 -, Utah State University.
- Qun Wang, “IoT and Big data”, August 2016 -, Utah State University.
- Shakil Ahmed, “5G wireless”, August 2016 -, Utah State University.
- Weiwei Hu, “Reliability and Survivability in all optical networks”, December 2004 – August 2005, Mississippi State University.
- Qinghai Gao, “Routing with Security and QoS in Wireless LANs”, August 2003 – June 2004, Mississippi State University.

### *Member (Ph.D. in EE):*

- Hu Chen, ECE Department, Utah State University, 2015 -
- Xuan Xie, ECE Department, Utah State University, 2014 –
- Yantian Hou, CS Department, Utah State University, 2013 – 2016.
- Nathanael Weidler, ECE Department, Utah State University, 2015 –
- Jingru Zhang, CS Department, Utah State University, 2016 -
- Yanfeng Gong, “Accurate real-time stability assessment techniques in electric power systems”, January 2002 – December 2004, Mississippi State University

## Masters Thesis Committees

### *Chair (MS in Electrical Engineering):*

- Sidhant Chatterjee, August 2015 -, Utah State University.
- Weiwei Hu, “Development and Evaluations of a Wavelength Rearrangement Scheme in All-optical Networks”, completed in August 2004, Mississippi State University
- Wei Zha, “An Adaptive Wireless LAN MAC Scheme to Achieve Maximum Throughput and QoS”, completed in December 2005, Mississippi State University

### *Member (MS in Electrical Engineering):*

- Megan Emmons, ECE Department, Utah State University
- Anway Mukjerjee, ECE Department, Utah State University
- Jing Li, “A Bit-Map-Assisted Energy-Efficient MAC Scheme for Wireless Sensor Networks”, May 2004, Mississippi State University
- Thirupathi Venganti, “Outage Management and Automated Meters”, June 2003, Mississippi State University
- Dong Zheng, “On the Modeling of TCP Latency and Throughput”, July 2002, Mississippi State University

- Manimaran Selvaraj, “Scheduling for Proportional Differentiated Services On the Internet”, December 2002, Mississippi State University

### **Undergraduate Student Research**

#### *Advisor on Senior Design Project*

- Cord Reynolds, Jason Pacher, Brian Barnes, Robbie Holt, “EJAE GPS Receivers”, Fall 2003.

### **Independent Studies for PhD and Master Students**

- Wei Zha, “Wireless LAN Quality of Service”, Spring 2005.
- Weiwei Hu, “Optical network failure protection and mesh restoration”, Spring 2004.
- Kaihua Huang, “Stochastic performance study in signal processing”, Fall 2003.
- Qinghai Gao, “Convergence on 3G and Wireless LAN”, Fall 2003.
- Deok Han, “Quality of Service and scheduling in all optical networks”, Spring 2003.

### **SERVICES**

#### **NSF Panels**

- NSF panelist since 2010

#### **University, School and Department Committees**

- Curriculum Committee, ECE department of Utah State University, 2012 –
- Faculty Search Committee, ECE department of Utah State University, 2012 –
- Graduate Committee, ECE department of Utah State University, 2012 –
- Graduate Committee, ECE department of Mississippi State University, 2002-2004.
- Electromagnetic Committee, ECE department of Mississippi State University, 2002-2004.
- Awards Committee, ECE department of Mississippi State University, 2002-2004.

#### **Journal Editorship**

- Editor, IEEE Transactions on Wireless Communications
- Editor, IEEE Transactions on Vehicular Technology
- Technical Editor, IEEE Communications Magazine
- Technical Editor, IEEE Wireless Communications Magazine
- Associate Editor, IEEE Journal of Internet of Things
- Associate Editor, Journal of Security and Communication Networks
- Associate Editor, Journal of Wireless Communications and Mobile Computing

- Editor, IEEE 5G Initiatives Special Issue on 5G Technologies and Applications in IEEE Vehicular Technology Magazine 2017 – 2020
- Guest Editor, IEEE Communications Magazine, Special Issue on “Software defined wireless networks (SDWN): Part 1”, November 2015.
- Leading Guest Editor, IEEE Communications Magazine, Special Issue on “Security in wireless multimedia communications”, March 2014.
- Guest Editor, IEEE Sensor Journal, Special Issue on “Internet of Things (IoT): Architecture, Protocols and Services”, October 2013.
- Leading Guest Editor, IEEE Communications Magazine Special Issue on “Cyber Security for Smart Grid Communications”, published in August 2012 and January 2013.
- Leading Guest Editor, IEEE Wireless Communications Magazine, Special Issue on “Recent Advances in Wireless Technologies for Smart Grid”, June 2012.
- Leading Guest Editor, IEEE Communications Magazine Special Issue on “Recent Progress in Machine to Machine Communications”, April 2011.
- Leading Guest Editor, IEEE Wireless Communications Magazine Special Issue on “HetNets – A New Paradigm for Increasing Cellular Capacity and Coverage”, June 2011.
- Guest Editor, IEEE Network Magazine Special Issue on “Communication Infrastructures for Smart Grid”, September 2011.

### **Conference Program Committees**

- TPC Co-Chair, IEEE ICC 2018
- Workshop Co-Chair, IEEE VTC Spring 2018
- Symposium Co-Chair, IEEE ICC 2015
- Best paper awards committee, IEEE Globecom 2015, IEEE ICC 2013
- Symposium Co-Chair, IEEE ICC 2014
- TPC Co-Chair, IEEE Online Greencom 2014
- Symposium Co-Chair, The 9th International Wireless Communications & Mobile Computing Conference (IWCMC) 2013
- Symposium Co-Chair, ICNC (International Conference on Computing, Networking and Communications) 2013
- Co-Chair, IEEE WCNC (Wireless Communications and Networking Conference) 2013.
- Conference Track Co-Chair, IEEE SmartGrid Comm 2012
- Symposium Co-Chair, IEEE ICC 2012
- Session Chair, IEEE Globecom 2009, 2011, 2012, 2013, 2014, 2015
- Track Chair, Wireless Telecommunications Symposiums 2007

- Technical Program Committee Member, IEEE INFOCOM 2012
- Technical Program Committee Member, IEEE ICC 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016
- Technical Program Committee Member, IEEE Globecom 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016
- Technical Program Committee Member, IEEE PIMRC 2011, 2012
- Technical Program Committee Member, ICNC 2011
- Technical Program Committee Member, IEEE Smart GridComm 2011
- Technical Program Committee Member, International Teletraffic Congress 20
- Technical Program Committee Member, Wireless Telecommunications Symposiums 2005, 2006, 2007
- Technical Program Committee Member, IASTED WNET 2006
- Technical Program Committee Member, the 11th International Workshop on CAMAD.
- Technical Program Committee Member, IEEE RAWCON 2004
- Technical Program Committee Member, IEEE VTC 2003, 2010, 2011

#### **Reviews of Conference Papers, Journal Articles**

- Reviewer for the international conferences including IEEE INFOCOM, IEEE Globecom, IEEE ICC, IEEE VTC, IEEE RAWCOM, IEEE ICCCN, Wireless Telecommunications Symposiums.
- Reviewer for the following technical journals
  - i. IEEE Communications Magazine
  - ii. IEEE Wireless Communications Magazine
  - iii. IEEE Transactions on Parallel and Distributed Systems
  - iv. IEEE Transactions on Wireless Communications
  - v. IEEE Transactions on Vehicular Technologies
  - vi. IEEE Transactions on Mobile Computing
  - vii. IEEE Journal on Selected Areas in Communications (JSAC)
  - viii. IEEE Communications Surveys and Tutorials
  - ix. IEEE Internet of Things Journal
  - x. IEEE Transactions on Fuzzy Systems
  - xi. IEEE Communications Letters

- xii. Journal of Wireless Communications and Mobile Computing
- xiii. The Computer Journal
- xiv. Computer Communications
- xv. Internal Journal of Communications Systems

#### **PROFESSIONAL ORGANIZATIONS**

- Senior Member of IEEE, since 2006
- Member of IEEE Communications Society
- IEEE 5G Initiative Steering Committee Member
- IEEE 5G Technical Roadmap Co-Chair
- IEEE 5G Massive MIMO Working Group Chair
- Founding member, IEEE Technical Committee on Green Communications & Computing (GCC)
- Founding member, IEEE GCC SIG on Green Smart Grid Communications
- Founding member, IEEE GCC SIG on Green Cognitive Communications and Computing Networks
- Member of Phi Kappa Phi and Epsilon Pi Epsilon Honor Societies
- Life member of Chinese Institute of Engineers

#### **HONORS AND AWARDS**

- IEEE ComSoc Distinguished Lecturer Class 2015-2018
- Researcher of the Year, ECE Department, Utah State University 2016
- Researcher of the Year, ECE Department, Utah State University 2014
- Researcher of the Year, College of Engineering, Utah State University 2014
- IEEE VTC Spring 2016 Best Paper Award
- IEEE ICC 2016 Best Paper Award
- IEEE ICC 2015 Best Paper Award
- Best 50 papers among 2000+ submissions of IEEE Globecom 2014

- Invited attendee for NSF workshop on Next Generation Wireless Networking 2013
- IEEE Globecom 2012 Best Paper Award
- Invited attendee for NSF Future-HetNet workshop 2011
- Marquis Who's Who in World 2009
- Marquis Who's Who of American Women, 2008
- NSF FORWARD to professional workshop 2004
- Research Initial Award, Mississippi State University, January 2003
- Award of Technical Excellence 1999 in Nortel Networks
- OPNETWORK'99 Distinguished Paper Award, "Simulation Study for a Broadband Multimedia VSAT Network", Washington, DC, September 1999
- Zhang Zongzhi Excellent Undergraduate Student Award at University of Science and Technology of China
- Recipient of the Academic Excellence Award at University of Science and Technology of China
- Excellent high school student award in Jiangsu Province (Top 0.1%)