
Ning ZHANG

Department of Computing Sciences
Texas A&M University at Corpus Christi
6300 Ocean Dr.
Corpus Christi, Texas, 78412, USA

Email: ning.zhang@tamucc.edu
Phone: +1 (361) 360-9258

EDUCATION

Ph.D., Electrical and Computer Engineering	Sept. 2010-Jan. 2015
University of Waterloo, Waterloo, Ontario, Canada	
Master of Engineering in Electrical Engineering	Sept. 2007-Mar. 2010
Beijing University of Posts and Telecommunications, Beijing, P.R. China	
Bachelor of Engineering in Telecommunication Engineering	Sept. 2003-Sept. 2007
Beijing Jiaotong University, Beijing, P.R. China	

PROFESSIONAL EXPERIENCE

Assistant Professor	Sept. 2017– present
Texas A&M University at Corpus Christi, Texas, USA	
Postdoctoral Research Fellow	May 2016—Sept. 2017
University of Toronto, Toronto, Ontario, Canada	
Postdoctoral Research Fellow	May 2015—Apr. 2016
University of Waterloo, Waterloo, Ontario, Canada	

PUBLICATION

Statistics (Based on Google Scholar)

- Total number of citations: **2770**, h-index: **27**, and i10-index: **61**

Book/Book Chapter

- [B1] **N. Zhang**, and J. W. Mark, “Security-aware Cooperation in Cognitive Radio Networks”
Springer Briefs in Computer Science, Springer Verlag, 2013 (ISBN 978-1-4939-0412-9)
- [B2] **N. Zhang**, H. Zhou, S. Wu, Y. Wang, J.W. Mark, and X. Shen, “Cooperation Based Dynamic Spectrum Sharing in Cognitive Radio Networks,”
Spectrum Sharing in Wireless Networks: Fairness, Efficiency, and Security, CRC Press, 2015.
- [B3] **N. Zhang**, N. Cheng, N. Lu, H. Zhou, J.W. Mark, and X. Shen, “Opportunistic Spectrum Access in Multichannel Cognitive Radio Networks,”
Multimedia Over Cognitive Radio Networks: Algorithms, Protocols, and Experiments, CRC Press, 2014.
- [B4] S. Zhang, **N. Zhang**, S. Zhou, Z. Niu and X. Shen, “Wireless Traffic Steering for Green Cell Networks,”
Springer Verlag, 2016 (ISBN-10: 3319327194, ISBN-13:978-3319327198)
- [B5] J. Ren, **N. Zhang**, and X. Shen, “Energy-Efficient Spectrum Management for Cognitive Radio Sensor Networks”,
Springer Verlag, 2017. (ISBN-10: 3319603175, ISBN-13: 978-3319603179)

Refereed Journal Papers

- [J1] L. Ale, **N. Zhang**, H. Wu, D. Chen, T. Han, “Online Proactive Caching in Mobile Edge Computing Using Bidirectional Deep Recurrent Neural Network”,
IEEE Internet of Things Journal, 2019, DOI: 10.1109/JIOT.2019.2903245

- [J2] W Wu, N Zhang, N Cheng, Y Tang, K Aldubaikhy, X Shen, “Beef up mmWave Dense Cellular Networks with D2D-Assisted Cooperative Edge Caching”,
IEEE Transactions on Vehicular Technology, 2019, DOI: 10.1109/TVT.2019.2896906
- [J3] Y. Chen, **N. Zhang**, Y. Zhang, X. Chen, W. Wen, and X. Shen, “Energy Efficient Dynamic Offloading in Mobile Edge Computing for Internet of Things”,
IEEE Transactions on Cloud Computing, 2019, DOI: 10.1109/TCC.2019.2898657
- [J4] Z. Su, Y. Wang, and **N. Zhang**, “BSIS: Blockchain based Secure Incentive Scheme for Energy Delivery in Vehicular Energy Network”,
IEEE Transactions on Industrial Informatics, 2019
- [J5] J. Xu, S Wang, **N. Zhang**, F. Yang, and X. Shen, “Reward or Penalty: Aligning Incentives of Stakeholders in Crowdsourcing”,
IEEE Transactions on Mobile Computing, Vol.8, No.4, pp.974-985, 2019
- [J6] Q. Jiang, X. Huang, **N. Zhang**, K. Zhang, J. Ma, “Shake to Communicate: Secure Handshake Acceleration-based Pairing Mechanism for Wrist Worn Devices”,
IEEE Internet of Things Journal, 2019
- [J7] Y Liu, A Liu, N Zhang, X Liu, M Ma, Y Hu, “DDC: Dynamic duty cycle for improving delay and energy efficiency in wireless sensor networks”,
Journal of Network and Computer Applications, 2019
- [J8] X Liu, Y Liu, N Zhang, W Wu, A Liu, “Optimizing Trajectory of Unmanned Aerial Vehicles for Efficient Data Acquisition: A Matrix Completion Approach”,
IEEE Internet of Things Journal, 2019, DOI: 10.1109/JIOT.2019.2894257
- [J9] Z. Qin, L. Hu, **N. Zhang**, D. Chen, K. Zhang, Z. Qin, and K.R. Choo, “Learning Aided User Identification Using Smartphone Sensors for Smart Homes”,
IEEE Internet of Things Journal, 2019, DOI: 10.1109/JIOT.2019.2900862
- [J10] Y. Chen, **N. Zhang**, Y. Zhang, and X. Chen, “Dynamic Computation Offloading in Edge Computing for Internet of Things”,
IEEE Internet of Things Journal, 2019, DOI: 10.1109/JIOT.2018.2875715
- [J11] P. Yang, **N. Zhang**, S. Zhang, L. Yu, J. Zhang, and X. Shen, “Content Popularity Prediction Towards Location-Aware Mobile Edge Caching”,
IEEE Transactions on Multimedia, 2018, DOI: 10.1109/TMM.2018.2870521
- [J12] H. Wu, X. Tao, **N. Zhang**, and X. Shen, “Cooperative UAV Cluster Assisted Terrestrial Cellular Networks for Ubiquitous Coverage”,
IEEE Journal on Selected Areas in Communications, DOI: 10.1109/JSAC.2018.2864418.
- [J13] Z. Su, Y. Wang, Q. Xu, M. Fei, Y. Tian, and **N. Zhang**, “A Secure Charging Scheme for Electric Vehicles with Smart Communities in Energy Blockchain”,
IEEE Internet of Things Journal, 2018
- [J14] X. Yuan, C. Li, Q. Ye, K. Zhang, N. Cheng, **N. Zhang**, X. Shen, “Performance Analysis of IEEE 802.15. 6-Based Coexisting Mobile WBANs with Prioritized Traffic and Dynamic Interference”,
IEEE Transactions on Wireless Communications, DOI: 10.1109/TWC.2018.2848223
- [J15] D. Chen, **N. Zhang**, R. Lu, X. Fang, K. Zhang, Z. Qin and X. Shen, “An LDPC Code based Physical layer Authentication Scheme with Perfect Security”,
IEEE Journal on Selected Areas in Communications, DOI: 10.1109/JSAC.2018.2825079
- [J16] D. Chen, **N. Zhang**, N. Cheng, K. Zhang, Z. Qin and X. Shen, “Physical Layer based Message Authentication with Secure Channel Codes”,
IEEE Transactions on Dependable and Secure Computing, DOI: 10.1109/TDSC.2018.2846258
- [J17] D. Chen, **N. Zhang**, R. Lu, N. Cheng, K. Zhang, and Z. Qin, “Channel Precoding Based Message Authentication in Wireless Networks: Challenges and Solutions”,
IEEE Network, DOI: 10.1109/MNET.2018.1700392
- [J18] Y. Wang, M. Sheng, W. Zhuang, S. Zhang, **N. Zhang**, R. Liu, and J. Li, “Multi-resource coordinate scheduling for earth observation in space information networks”,
IEEE Journal on Selected Areas in Communications, Vol.36, no.2, pp.268-279, 2018

- [J19] J. Li, Y. Ding, Q. Ye, N. Zhang, W. Zhuang, “On Effective Capacity and Effective Energy Efficiency in Relay-Assisted Wireless Networks,”
IEEE Transactions on Vehicular Technology 67(5): 4389-4400 (2018)
- [J20] N. Zhang, P. Yang, J. Ren, D. Chen, Y. Li, and X. Shen, “Synergy of Big Data and 5G Wireless Networks: Opportunities, Approaches, and Challenges”
IEEE Wireless Communications, Vol.25, no.1, pp.12-18, 2018
- [J21] D. Wang, N. Zhang, Z. Li, F. Gao, and X. Shen, “Leveraging High Order Cumulants for Spectrum Sensing and Power Recognition in Cognitive Radio Networks”
IEEE Transactions on Wireless Communications, vol. 17, no. 2, pp. 1298-1310, 2018.
- [J22] D. Wang, Z. Li, N. Zhang, H. Wu, and X. Shen, “Channel States Classification in Cognitive Small Cell Networks with Multiple Transmission Powers”
IEEE Transactions on Vehicular Technology, DOI: 10.1109/TVT.2018.2810073
- [J23] W. Shi, H. Zhao, J. Li, W. Xu, N. Zhang, and X. Shen, “Drone Assisted Vehicular Networks: Architecture, Challenges and Opportunities”
IEEE Network, Vol.32, no.3, pp.130-137, 2018
- [J24] W. Shi, J. Li, W. Xu, H. Zhou, N. Zhang, S. Zhang, X. Shen, “Multiple Drone-Cell Deployment Analyses and Optimization in Drone Assisted Radio Access Networks,”
IEEE Access 6: 12518-12529 (2018)
- [J25] S. Li, N. Zhang, S. Lin, L. Kong, A. Katangur, M. Khan, M. Ni, and G. Zhu, “Joint Admission Control and Resource Allocation in Edge Computing for Internet of Things”
IEEE Network, Vol.32, no.1, pp.72-79, 2018
- [J26] X. Fang, N. Zhang, S. Zhang, D. Chen, X. Sha, and X. Shen, “On Physical Layer Security: Weighted Fractional Fourier Transform based User Cooperation,”
IEEE Transactions on Wireless Communications, Vol.16, No.8, pp.5498-5510, 2017
- [J27] H. Wu, N. Zhang, Z. Wei, S. Zhang, X. Tao, X. Shen, and P. Zhang, “Content-aware Cooperative Transmission in HetNets with Consideration of Base Station Height”,
IEEE Transactions on Vehicular Technology, DOI: 10.1109/TVT.2018.2809616
- [J28] H. Wu, N. Zhang, X. Tao, Z. Wei, and X. Shen, “Capacity- and Trust-aware BS Cooperation in Non-uniform HetNets: Spectral Efficiency and Optimal BS Density”,
IEEE Transactions on Vehicular Technology, 2017, DOI: 10.1109/TVT.2017.2729346.
- [J29] H. Wu, X. Tao, N. Zhang, D. Wang, S. Zhang, and X. Shen, “On Base Station Coordination in Cache- and Energy Harvesting-Enabled HetNets: A Stochastic Geometry Study”,
IEEE Transactions on Communications, 2017. DOI: 10.1109/TCOMM.2017.2788012.
- [J30] S. Zhang, N. Zhang, P. Yang, and X. Shen, “Cost-Effective Cache Deployment in Mobile Heterogeneous Networks”,
IEEE Transactions on Vehicular Technology, 2017, DOI: 10.1109/TVT.2017.2724547.
- [J31] N. Zhang, S. Zhang, P. Yang, O. Alhussain, W. Zhuang, and X. Shen, “Software Defined Space-Air-Ground Integrated Vehicular Networks: Challenges and Solutions,”
IEEE Communication Magazine, Vol.55, No.7, pp.101-109, 2017
- [J32] N. Zhang, S. Zhang, J. Zheng, X. Fang, J.W. Mark, and X. Shen, “QoE Driven Decentralized Spectrum Sharing in 5G Networks: Potential Game Approach,”
IEEE Transactions on Vehicular Technology, Vol.66, No.9, pp.97797-7808, 2017
- [J33] S. Zhang, N. Zhang, X. Fang, P. Yang, and X. Shen, “Self-Sustaining Caching Stations: Towards Cost-Effective 5G-Enabled Vehicular Networks”,
IEEE Communications Magazine, Vol.55, No.11, pp.202-208, 2017
- [J34] P. Yang, N. Zhang, S. Zhang, K. Yang, L. Yu, and X. Shen, “Identifying the Most Valuable Workers in Fog-Assisted Spatial Crowdsourcing”,
IEEE Internet of Things Journal, Vol.4, No.5, pp.1193-1203, 2017
- [J35] S. Zhang, N. Zhang, S. Zhou, J. Gong, Z. Niu, and X. Shen, “Energy-Sustainable Traffic Steering for 5G Mobile Networks”,
IEEE Communications Magazine, Vol.55, No.11, pp.54-60, 2017

- [J36] F. Lyu, H. Zhu, H. Zhou, W. Xu, **N. Zhang**, M. Li, and X. Shen, "SS-MAC: A Novel Time Slot-Sharing MAC for Safety Messages Broadcasting in VANETs", **IEEE Transactions on Vehicular Technology**, 2017, DOI: 10.1109/TVT.2017.2780829.
- [J37] P. Yang, **N. Zhang**, Y. Bi, L. Yu, and X. Shen, "Catalyzing Cloud-Fog Interoperation in 5G Wireless Networks: An SDN Approach," **IEEE Network**, Vol.31, No.5, pp.14-20, 2017
- [J38] J. Ni, K. Zhang, K. Alharbi, X. Lin, **N. Zhang**, X. Shen, "Differentially Private Smart Metering with Fault Tolerance and Range-Based Filtering" **IEEE Transactions on Smart Grid**, Vol.8, No.5, pp.2483-2493, 2017
- [J39] **N. Zhang**, P. Yang, S. Zhang, D. Chen, W. Zhuang, B. Liang, and X. Shen, "Software Defined Networking Enabled Wireless Network Virtualization: Challenges and Solutions," **IEEE Network**, Vol.31, No.5, pp.42-49, 2017
- [J40] J. Zheng, Y. Wu, **N. Zhang**, H. Zhou, Y. Cai, and X. Shen, "Optimal Power Control in Ultra-Dense Small Cell Networks: A Game-Theoretic Approach," **IEEE Transactions on Wireless Communications**, Vol.16, No.7, pp.4139-4150, 2017
- [J41] J. Chen, H. Zhou, **N. Zhang**, W. Xu, Q. Yu, L. Gui, and X. Shen, "Service-Oriented Overlay Network Construction for Software Defined Internet of Vehicles", **IEEE Transactions on Intelligent Transportation Systems**, Vol.18, No.10, pp.2826-2837, 2017
- [J42] J. Xu, S. Wu, L. Xu, **N. Zhang**, Q. Zhang, "Green-oriented User-satisfaction Aware WiFi Offloading in HetNets", **IET Communications**, 2017, DOI: 10.1049/iet-com.2017.0489.
- [J43] D. Chen, **N. Zhang**, Z. Qin, X. Mao, Z. Qin, X. Shen, and X. Li, "S2M: A Lightweight Acoustic Fingerprints based Wireless Device Authentication Protocol", **IEEE Internet of Things Journal**, Vol.4, No.1, pp.88-100, 2017
- [J44] X. Jin, **N. Zhang**, K. Yang, X. Shen, Z. Xu, C. Zhang, and Z. Jin, "PN Ranging based on Noncommensurate Sampling: Zero-bias Mitigation Methods", **IEEE Transactions on Aerospace and Electronic Systems**, Vol. 53, No. 2, pp. 926-940, 2017.
- [J45] N. Chen, M. Wang, **N. Zhang**, X. Shen, and D. Zhao, "SDN Based Framework for the PEV Integrated Smart Grid", **IEEE Network**, Vol.31, No. 2, pp. 14-21, 2017
- [J46] H. Zhou, **N. Zhang**, Y. Bi, Q. Yu, and X. Shen, "TV White Space Enabled Connected Vehicular Communications: Challenges and Solutions," **IEEE Network**, Vol. 31, No. 3, pp. 6-13, 2017.
- [J47] Q. Wang, D. Chen, **N. Zhang**, Z. Qin, Z. Qin, "LACS: A Lightweight Label-Based Access Control Scheme in IoT-Based 5G Caching Context," **IEEE Access**, Vol. 5, pp.4018-4027, 2017.
- [J48] S. Wu, **N. Zhang**, H. Zhou, Q. Zhang, and X. Shen, "High Precision IR-UWB Ranging for VANETs: A Compressed Sensing Approach," **Wiley Wireless Communications and Mobile Computing**, Vol. 16, No. 17, pp. 3015-3031, 2017
- [J49] N. Cheng, N. Lu, **N. Zhang**, X. Zhang, X. Shen, and J.W. Mark, "Opportunistic WiFi Offloading in Vehicular Environment: A Game-Theory Approach," **IEEE Transactions on Intelligent Transportation Systems**, Vol.17, No.7, pp.1944-1955, 2016.
- [J50] N. Lu, N. Cheng, **N. Zhang**, X. Shen, and J.W. Mark, "Wi-Fi Hotspot at Signalized Intersection: Cost-Effectiveness for Vehicular Internet Access," **IEEE Transactions on Vehicular Technology**, Vol. 65, No. 5, pp. 3506-3518, 2016
- [J51] N. Cheng, H. Zhou, L. Lei, **N. Zhang**, Y. Zhou, X. Shen, and F. Bai, "Performance Analysis of Vehicular Device-to-Device Underlay Communication", **IEEE Transactions on Vehicular Technology**, 2016.
- [J52] N. Cheng, N. Lu, **N. Zhang**, T. Yang, X. Shen, and J.W. Mark, "Vehicle-Assisted Device-to-Device Data Delivery for Smart Grid," **IEEE Transactions on Vehicular Technology**, Vol.65, No.4, pp.2325 - 2340, 2016.

- [J53] N. Zhang, S. Zhang, S. Wu, J. Ren, J.W. Mark, and X. Shen, "Beyond Coexistence: Traffic Steering in LTE Networks with Unlicensed Bands," **IEEE Wireless Communications**, Vol. 23, No.6, pp.40-46, 2016.
- [J54] S. Zhang, N. Zhang, S. Zhou, J. Gong, Z. Niu, and X. Shen, "Energy-Aware Traffic Offloading for Green Heterogeneous Networks," **IEEE Journal on Selected Areas in Communications**, Vol.34, No.34, No.5, 2016.
- [J55] J. Ren, Y. Zhang, N. Zhang, D. Zhang, and X. Shen, "Dynamic Channel Access to Improve Energy Efficiency in Cognitive Radio Sensor Networks," **IEEE Transactions on Wireless Communications**, Vol.15, No.5, pp. 3143-3156, 2016.
- [J56] J. Ren, Y. Zhang, R. Deng, N. Zhang, and X. Shen, "Joint Channel Access and Sampling Rate Control in Energy Harvesting Cognitive Radio Sensor Networks," **IEEE Transactions on Emerging Topics in Computing**, 2016.
- [J57] F. Lin, C. Chen, N. Zhang, X. Guan, and X. Shen, "Autonomous Channel Switching: Towards Efficient Spectrum Sharing in Industrial Wireless Sensor Networks," **IEEE Internet of Things Journal**, Vol.3, No.2, pp. 231-243, 2016.
- [J58] D. Zhang, Z. Chen, J. Ren, N. Zhang, M. Awad, H. Zhou, and X. Shen, "Energy Harvesting-Aided Spectrum Sensing and Data Transmission in Heterogeneous Cognitive Radio Sensor Network", **IEEE Trans. on Vehicular Technology**, vol. 66, no. 1, pp. 831-843, 2017.
- [J59] D. Zhang, Z. Chen, M. Awad, N. Zhang, H. Zhou, and X. Shen, "Utility-optimal Resource Management and Allocation Algorithm for Energy Harvesting Cognitive Radio Sensor Networks," **IEEE Journal on Selected Areas in Communications**, Vol.34, No.12, pp.3552-3565, 2016.
- [J60] H. Peng, S. Si, M. Awad, N. Zhang, H. Zhou, Q. Zhang, and X. Shen, "Towards Energy-Efficient and Robust Large-Scale WSNs: A Scale-Free Network Approach," **IEEE Journal on Selected Areas in Communications**, Vol.34, No.12, pp. 4035-4047, 2016.
- [J61] N. Zhang, N. Cheng, A. Gamage, K. Zhang, J.W. Mark, and X. Shen, "Cloud Assisted HetNets Toward 5G Wireless Networks," **IEEE Communization Magazine**, Vol. 53, No. 6, pp. 59 - 65, 2015.
- [J62] N. Zhang, H. Zhou, K. Zheng, N. Cheng, J.W. Mark, and X. Shen, "Cooperative Heterogeneous Framework for Spectrum Harvesting in Cognitive Cellular Network," **IEEE Communization Magazine**, Vol. 14, No. 8, pp. 4265 - 4276, 2015.
- [J63] H. Zhou, B. Liu, F. Hou, T. Luan, N. Zhang, L. Gui, Q. Yu, X. Shen, "Spatial Coordinated Medium Sharing: Optimal Access Control Management in Drive-Thru Internet", **IEEE Trans. Intelligent Transportation Systems**, Vol.16, No.5, pp.2673-2686, 2015.
- [J64] H. Zhou, B. Liu, Y. Liu, N. Zhang, Lin Gui, Ying Li, X. Shen, Q. Yu, "A Cooperative Matching Approach for Resource Management in Dynamic Spectrum Access Networks" **IEEE Trans. Wireless Communications**, Vol.13, No.2, pp. 1047-1057,2014.
- [J65] N. Zhang, N. Cheng, N. Lu, X. Zhang, J.W. Mark, and X. Shen, "Partner Selection and Incentive Mechanism for Physical Layer Security," **IEEE Transactions on Wireless Communications**, Vol. 14, No. 8, pp. 4265 - 4276, 2015.
- [J66] N. Zhang, N. Cheng, H. Liang, Y. Tang, J.W. Mark, and X. Shen, "Dynamic Spectrum Access in Multi-Channel Cognitive Radio Networks," **IEEE Journal on Selected Areas in Communications**, Vol. 32, No. 11, pp. 2053 - 2064, 2014.
- [J67] N. Zhang, N. Cheng, N. Lu, H. Zhou, X. Shen, and J.W. Mark, "Risk-aware Cooperative Spectrum Access for Multi-Channel Cognitive Radio Networks," **IEEE Journal on Selected Areas in Communications**, Vol. 32, No. 3, pp. 516 C 527, 2014.
- [J68] N. Cheng, N. Lu, N. Zhang, X. Shen, and J.W. Mark, "Vehicular WiFi Offloading: Challenges and Solutions," **Vehicular Communications (Elsevier)**, Vol. 1, No. 1, pp. 13-21, 2014.
- [J69] N. Cheng, N. Zhang, N. Lu, X. Shen, J.W. Mark, and F. Liu, "Opportunistic Spectrum Access for CR-VANETs: A Game Theoretic Approach," **IEEE Transactions on Vehicular Technology**, Vol. 63, Issue 1, pp. 237-251, 2014.

- [J70] N. Lu, N. Cheng, **N. Zhang**, X. Shen, and J.W. Mark, "Connected Vehicles: Solutions and Challenges," **IEEE Internet of Things Journal**, Vol. 1, No. 4, pp. 289-299, 2014.
- [J71] N. Lu, **N. Zhang**, N. Cheng, X. Shen, J.W. Mark, and F. Bai, "Vehicles Meet Infrastructure: Towards Capacity-Cost Tradeoffs for Vehicular Access Networks," **IEEE Transactions on Intelligent Transportation Systems**, Vol. 14, No. 3, pp. 1266-1277, 2013.
- [J72] **N. Zhang**, N. Lu, N. Cheng, J.W. Mark, and X. Shen, "Cooperative Spectrum Access Towards Secure Information Transfer for CRNs," **IEEE Journal on Selected Areas in Communications**, Vol. 31, No. 11, pp. 2453-2464, 2013

Refereed Conference Papers

- [C1] P. Yang, **N. Zhang**, S. Zhang, F. Lve, L. Yu, and X. Shen, "Asymptotic Optimal Edge Resource Allocation for Video Streaming via User Preference Prediction", **IEEE ICC 2019 - IEEE International Conference on Communications**, 2019.
- [C2] J. Opadere, Q. Liu, **N. Zhang**, and T. Han, "Joint Computation and Communication Resource Allocation for Energy-Efficient Mobile Edge Networks", **IEEE ICC 2019 - IEEE International Conference on Communications**, 2019.
- [C3] L Ale, **N. Zhang**, and L Li, "Road Damage Detection Using RetinaNet", **IEEE Big Data**, - IEEE International Conference on Big Data 2018.
- [C4] Y Wang, Z Su, Q Xu, and **N. Zhang**, "Contract Based Energy Blockchain for Secure Electric Vehicles Charging in Smart Community", **IEEE DASC**, - IEEE 16th Intl Conf on Dependable, Autonomic and Secure Computing 2018.
- [C5] S Zhu, L Gui, J Chen, Q Zhang, **N. Zhang**, "Cooperative Computation Offloading for UAVs: A Joint Radio and Computing Resource Allocation Approach", **IEEE EDGE**, 2018.
- [C6] J. Ma, **N. Zhang**, and X. Shen, "Mitigation of Distribution Level Load Fluctuation by Exploiting Elasticity of Local Area Packetized Power Networks", **IEEE ICC 2018 - IEEE International Conference on Communications**, 2018.
- [C7] X. Yuan, C. Li, K. Zhang, Q. Ye, N. Cheng, **N. Zhang**, and X. Shen, "Dynamic Interference Analysis of Coexisting Mobile WBANs for Health Monitoring", **IEEE ICC 2018 - IEEE International Conference on Communications**, 2018.
- [C8] W. Wu, Q. Shen, K. Aldubaikhy, N. Cheng, **N. Zhang**, and X. Shen, "Enhance the Edge with Beamforming: Performance Analysis of Beamforming-Enabled WLAN", **IEEE WiOpt'18- EFC-IoT**, 2018.
- [C9] D. Chen, N. Cheng, **N. Zhang**, K. Zhang, K. Yang, Z. Qin, and X. Shen, "An Efficient PHY-layer-based Authentication Protocol over Binary-input Wiretap Channel", **IEEE MASS 2017 — IEEE Mobile Adhoc and Sensor Systems**, 2017.
- [C10] K. Zhao, S. Zhang, **N. Zhang**, Y. Zhou, Y. Zhang, and X. Shen, "Incentive Mechanism for Cached-Enabled Small Cell Sharing: A Stackelberg Game Approach", **IEEE Globecom 2017 — IEEE Global Communications Conference**, 2017.
- [C11] X. Ma, S. Zhang, P. Yang, **N. Zhang**, C. Lin, and X. Shen, "Cost-Efficient Resource Provisioning in Cloud Assisted Mobile Edge Computing", **IEEE Globecom 2017 — IEEE Global Communications Conference**, 2017.
- [C12] D. Wang, Z. Li, **N. Zhang**, and X. Shen, "Spectrum Sensing and Power Classification in Spatially Correlated Noise Scenarios", **IEEE Globecom 20167 — IEEE Global Communications Conference**, 2017.
- [C13] J. Li, **N. Zhang**, Q. Ye, W. Shi, W. Zhuang, and X. Shen, "Joint resource allocation and online virtual network embedding for 5G networks", **IEEE Globecom 2017 — IEEE Global Communications Conference**, 2017.

- [C14] P. Yang, **N. Zhang**, S. Zhang, L. Yu, J. Zhang, and X. Shen, “Dynamic Mobile Edge Caching with Location Differentiation”,
IEEE Globecom 2017 — IEEE Global Communications Conference, 2017.
- [C15] Y. Wang, M. Sheng, W. Zhuang, S. Zhang, **N. Zhang**, and J. Li, “Joint Scheduling of Observation and Transmission in Earth Observation Satellite Networks”,
IEEE Globecom 2017 — IEEE Global Communications Conference, 2017.
- [C16] X. Fang, **N. Zhang**, X. Sha, D. Chen, X. Wu, and X. Shen, “Physical Layer Security: A Weighted Fractional Fourier Transform based Cooperation Approach”,
IEEE ICC 2017 — IEEE International Conference on Communications, 2017.
- [C17] S. Zhang, **N. Zhang**, X. Fang, P. Yang, and X. Shen, “Cost-Effective Vehicular Network Planning with Cache-Enabled Green Roadside Units”,
IEEE ICC 2017 — IEEE International Conference on Communications, 2017.
- [C18] D. Wang, Z. Li, **N. Zhang**, P. Qi, and X. Shen, “High Order Cumulants based Spectrum Sensing and Power Recognition in Hybrid Interweave-Underlay Spectrum Access”,
IEEE ICC 2017 — IEEE International Conference on Communications, 2017.
- [C19] X. Fang, X. Wu, **N. Zhang**, X. Sha, and X. Shen, “Safeguarding Physical Layer Security Using Weighted Fractional Fourier Transform”,
IEEE Globecom 2016 — IEEE Global Communications Conference, 2016.
- [C20] **N. Zhang**, S. Zhang, J. Zheng, X. Fang, J. W. Mark, and X. Shen, “User Satisfaction-Aware Radio Resource Management in Ultra-Dense Small Cell Net”,
IEEE ICC 2016—IEEE International Conference on Computer and Communications
- [C21] X. Fang, X. Sha, **N. Zhang**, X. Wu, and X. Shen, “Towards PHY-aided Authentication via Weighted Fractional Fourier Transform”,
IEEE VTC 2016 — IEEE Vehicular Technology Conference, 2016
- [C22] S. Zhang, S. Zhou, J. Gong, Z. Niu, **N. Zhang**, and X. Shen, “Spatial Traffic Shaping in Heterogeneous Cellular Networks with Energy Harvesting”,
IEEE Globecom 2015 — IEEE Global Communications Conference, 2015.
- [C23] **N. Zhang**, N. Cheng, X. Zhang, N. Lu, J.W. Mark, and X. Shen, “A Cooperative Scheme for Secure Communications with Partner Selection and Incentive Mechanism,”
IEEE WCSP 2014 — IEEE International Conference on Wireless Communications and Signal Processing, 2014.
- [C24] H. Zhou, N. Cheng, **N. Zhang**, S. Wu, L. Gui, Q. Yu, and X. Shen, “Enabling Efficient and Wide-Coverage Vehicular Content Distribution Over TV White Spaces,”
IEEE WCNC 2013 — IEEE Wireless Communications and Networking Conference, 2015. (**Best Paper Award**)
- [C25] **N. Zhang**, N. Cheng, H. Liang, Y. Tang, J.W. Mark, and X. Shen, “Efficient Channel Assignment for Cooperative Sensing based on Convex Bipartite Matching,”
IEEE ICC 2014 — IEEE International Conference on Communications, 2014.
- [C26] N. Cheng, N. Lu, **N. Zhang**, X. Shen, and J.W. Mark, “Opportunistic WiFi Offloading in Vehicular Environment: A Queueing Analysis,”
IEEE GLOBECOM 2014 — IEEE Global Communications Conference, 2014. (**Best Paper Award**)
- [C27] C. Pei, **N. Zhang**, X. Shen, and J.W. Mark, “Channel-based Physical Layer Authentication,”
IEEE GLOBECOM 2014 — IEEE Global Communications Conference, 2014.
- [C28] Z. Zheng, L. Cai, **N. Zhang**, R. Zhang, and X. Shen, “A Game Theoretical Approach for Energy Trading in Wireless Networks Powered by Green Energy,”
IEEE GLOBECOM 2014 — IEEE Global Communications Conference, 2014.
- [C29] **N. Zhang**, N. Cheng, N. Lu, H. Zhou, J.W. Mark, and X. Shen, “Cooperative Cognitive Radio Networking for Opportunistic Channel Access,”
IEEE GLOBECOM 2013 — IEEE Global Communications Conference, 2013.
- [C30] N. Cheng, N. Lu, **N. Zhang**, X. Shen, and J.W. Mark, “Vehicle-Assisted Data Delivery for Smart Grid: An Optimal Stopping Approach,”
IEEE ICC 2013 — IEEE International Conference on Communications, 2013.

- [C31] **N. Zhang**, N. Lu, R. Lu, J.W. Mark, and X. Shen, “Energy-Efficient and Trust-aware Cooperation in Cognitive Radio Networks,”
IEEE ICC 2012 — IEEE International Conference on Communications, 2012
- [C32] N. Lu, N. Cheng, **N. Zhang**, X. Shen, and J.W. Mark, “VeMail: A Message Handling System Towards Efficient Transportation Management,”
IEEE WCNC 2013 — IEEE Wireless Communications and Networking Conference, 2013.
- [C33] **N. Zhang**, N. Lu, N. Cheng, J.W. Mark, and X. Shen, “Cooperative Networking Towards Secure Communications for CRNs,”
IEEE WCNC 2013 — IEEE Wireless Communications and Networking Conference, 2013.
- [C34] **N. Zhang**, N. Lu, N. Cheng, J.W. Mark, and X. Shen, “Towards Secure Communications in Cooperative Cognitive Radio Networks”,
IEEE ICC 2013 — IEEE/CIC International Conference on Communications in China, 2013.
- [C35] T. Han, **N. Zhang**, K. Liu, B. Tang, and Y. Liu, “Analysis of Mobile WiMAX Security: Vulnerabilities and Solutions”,
IEEE MASS(WS) 2008 — IEEE International Conference on Mobile Adhoc and Sensor Systems, 2008.

HONORS and AWARDS

- **Best Paper Award** of Journal of Communications and Information Networks, 2018 (honor one paper over three years)
- **Natural Sciences and Engineering Research Council(NSERC) of Canada -PDF Award**, 2016
- **Best Paper Award** in the IEEE Globecom, 2014 (one of 14 awards out of 2171 submissions)
- **Best Paper Award** in the IEEE WCSP, 2015
- Doctoral Thesis Completion Award, University of Waterloo, 2014
- Faculty of Engineering Graduate Scholarship, University of Waterloo, 2014
- Graduate Scholarship, University of Waterloo, 2012-2014
- International Doctoral Student Award, University of Waterloo, 2010-2014

PROFESSIONAL SERVICES

Professional Membership:

- Senior Member of IEEE
- Member of the IEEE Communication Society
- Member of the IEEE Vehicular Technology Society

Editorship

- Associate Editor, IEEE Transactions on Cognitive Communications and Networking (TCCN)
- Associate Editor, IEEE Access
- Associate Editor, IET Communications
- Area Editor, Springer Encyclopedia of Wireless Networks
- Editor, Cambridge Scholars
- Guest Editor, IET Communications, Special Issue on UAV-Enabled Mobile Edge Computing
- Guest Editor, IEEE Access, Special Issue on Artificial Intelligence for Physical-Layer Wireless Communications
- Guest Editor, IEEE Access, Special Issue on Millimeter-Wave Communications: New Research Trends and Challenges

- Lead Guest Editor, Wireless Communications and Mobile Computing, Special Issue on Physical Layer Security for Internet of Things
- Lead Guest Editor, Wireless Communications and Mobile Computing, Special Issue on Emerging Technologies for Vehicular Communication Networks
- Lead Guest Editor, International Journal of Distributed Sensor Networks, Special Issue on Sustainable Cognitive Radio Sensor Networks
- Guest Editor, Mobile Information Systems, Special Issue on Green Internet of Things

Workshop Organization

- Co-chair, IEEE MobiEdge 2018: International Workshop on Mobile Edge Networks and Systems for Immersive Computing and IoT (in conjunction with IEEE WiMob 2018)
- Co-chair, IEEE CoopEdge 2018: International Workshop Cooperative Edge (in conjunction with IEEE EDGE 2018)
- Organizing team, IEEE SECIoT 2018, IEEE International Workshop on Sustainable Edge Computing for IoT systems

Technical Program Committee (TPC) Member

- IEEE International Conference on Big Data Science and Engineering (IEEE BigDataSE)'19
- IEEE International Conference on Communications in China (ICCC) '19
- IEEE International Conference on Communications (ICC) '18
- IEEE Global Communications Conference (Globecom)'17
- IEEE International Conference on Communications (ICC)'17
- IEEE Wireless Communications and Networking Conference (WCNC)'17
- IEEE International Conference on Computing, Networking and Communications (ICNC)'17
- IEEE Global Communications Conference (Globecom)'16.
- IEEE International Conference on Computing, Networking and Communication (ICNC)'16
- IEEE Vehicular Technology Conference Fall (VTC-Fall)'16
- IEEE International Conference on Communications (ICC)'15
- IEEE International Conference on Computing, Networking and Communication (ICNC)'15
- IEEE International Conference on Communications (ICC)'14 WS-SNFC
- IEEE International Conference on Wireless and Mobile Computing, Networking and Communications (WiMob)'14

Reviewer of Refereed Journals

- IEEE/ACM Transactions on Networking
- IEEE Journal on Selected Areas in Communications
- IEEE Transactions on Mobile Computing
- IEEE Transactions on Wireless Communications
- IEEE Transactions on Vehicular Technology
- IEEE Transactions on Industrial Informatics
- IEEE Transactions on Communications
- IEEE Transactions on Emerging Topics in Computing
- IEEE Transactions on Big Data
- IEEE Transactions on Dependable and Secure Computing
- IEEE Transactions on Signal Processing

- IEEE Communication Magazine
- IEEE Wireless Communications Magazine
- IEEE Network
- IEEE Wireless Communication Letters

Major University And Department Committees

- Awards & Scholarship Committee, College of Science & Engineering
- Faculty Search Committee, Department of Computing Sciences
- Graduate Studies Committee, Department of Computing Sciences