Kuan Zhang

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RESEARCH INTERESTS

Network security, privacy, intrusion detection, AI-based detection on malicious attacks, data analysis and modeling, edge and cloud computing, mobile social network, smart and connected health, intelligent agriculture, Internet of Things, embedded system

Research Highlight: 7000+ citations according to Google Scholar, h-index: 45, i10-index: 100

EMPLOYMENT

- **Associate Professor**   **2023—Present**
  Department of Electrical and Computer Engineering
  University of Nebraska-Lincoln, USA

- **Assistant Professor**   **2017—2023**
  Department of Electrical and Computer Engineering
  University of Nebraska-Lincoln, USA

- **Postdoctoral Fellow**   **2016—2017**
  Department of Electrical and Computer Engineering
  University of Waterloo, Waterloo, Ontario, Canada
  Supervisor: Professor Xuemin (Sherman) Shen

EDUCATION

- **Ph.D., Electrical and Computer Engineering**   **2011— 2016**
  University of Waterloo, Waterloo, Ontario, Canada
  Supervisor: Professor Xuemin (Sherman) Shen
  Thesis: Security and Privacy for Mobile Social Networks

- **Master of Science, Computer Applied Technology**   **2009— 2011**
  Northeastern University, Shenyang, China
  Supervisor: Professor Hai Zhao

- **Bachelor of Science, Communications Engineering**   **2005— 2009**
  Northeastern University, Shenyang, China

HONORS and AWARDS

- Co-recipient of Best Paper Award, IEEE ICC   2020
- Co-recipient of Best Paper Award, BigDataSE   2019
- IEEE Technical Committee on Scalable Computing, Award for Excellence (Outstanding Ph.D. Thesis)   2017
- Co-recipient of Best Paper Award, Securecomm   2016
- Co-recipient of Best Paper Award, IEEE WCNC   2013
- Recipient of Best Speaker Award, Graduate Research Seminar, University of Waterloo   2016
- Jon W. Mark Graduate Scholarship in Communication, University of Waterloo   2016
- Doctoral Thesis Writing Award, University of Waterloo   2015

- Doctoral Thesis Completion Award, University of Waterloo   2015
- University of Waterloo Special Graduate Scholarship (Based on the annual evaluation)   2013 and 2014

PUBLICATIONS

Books

[B1] **K. Zhang**, and X. Shen, "Security and Privacy for Mobile Healthcare Networks," **Springer**, ISBN-10: 3319247158, ISBN-13: 978-3319247151, November 2015.

[B2] Z. Su, Q. Xu, **K. Zhang**, and X. Shen, "Modeling and Optimization for Mobile Social Networks", **Springer**, ISBN-10: 3319479210, ISBN-13: 978-3319479217, March, 2017.

Book Chapters

[BC1] **K. Zhang**, X. Liang, R. Lu, and X. Shen, "Exploiting Private Profile Matching for Efficient Packet Forwarding in Mobile Social Networks," **Handbook on Opportunistic Mobile Social Networks**, CRC Press, Taylor & Francis Group, USA, August 2014.

Refereed Journal Papers

[J1] C. Yu*, S. Shen*, H. Yang, **K. Zhang**, and H. Zhao, "Leveraging Energy, Latency and Robustness for Routing Path Selection in Internet of Battlefield Things", accepted by IEEE Internet of Things Journal.

[J2] Y. Jiang*, **K. Zhang**, Y. Qian, and L. Zhou, "P2AE: Preserving Privacy, Accuracy, and Efficiency in Location-dependent Mobile Crowdsensing", accepted by IEEE Transactions on Mobile Computing.

[J3] K. Fan, Q. Chen, R. Su, **K. Zhang**, H. Wang, H. Li, and Y. Yang, "MSIAP: A Dynamic Searchable Encryption for Privacy-Protection on Smart Grid with Cloud-Edge-End", accepted by IEEE Transactions on Cloud Computing.

[J4] Y. Jiang*, **K. Zhang**, Y. Qian, and L. Zhou, "P2AE: Preserving Privacy, Accuracy, and Efficiency in Location-dependent Mobile Crowdsensing", accepted by IEEE Transactions on Mobile Computing.

[J5] H. Wang, K. Fan, **K. Zhang**, Z. Wang, H. Li, and Y. Yang, "Encrypted Data Retrieval and Sharing Scheme in Space-Air-Ground Integrated Vehicular Networks", accepted by IEEE Internet of Things Journal.

[J6] J. Ni, **K. Zhang**, Y. Yu, and T. Yang, "Identity-based Provable Data Possession from RSA Assumption for Secure Cloud Storage", accepted by IEEE Transactions on Dependable and Secure Computing.

[J7] S. Shen*, B. Liu, **K. Zhang**, and S. Ci, "Toward Fast and Accurate SOH Prediction for Lithium-ion Batteries", IEEE Transactions on Energy Conversion, vol. 36, no. 3, pp: 2036-2046, 2021.

[J8] S. Shen*, C. Yu*, **K. Zhang**, J. Ni, and S. Ci, "Adaptive and Dynamic Security in AI-empowered 6G: From an Energy Efficiency Perspective", accepted by IEEE Communications Standards Magazine.

[J9] S. Shen*, C. Yu*, **K. Zhang**, and S. Ci, "Adaptive Artificial Intelligence for Resource-constrained Connected Vehicles in Cybertwin-driven 6G Network", IEEE Internet of Things Journal, vol. 8, no. 22, pp: 16269-16278, 2021.

[J10] Y. Jiang*, **K. Zhang**, Y. Qian, and L. Zhou, "Reinforcement Learning-Based Query Optimization in Differentially Private IoT Data Publishing", IEEE Internet of Things Journal, vol. 8, no. 14, pp: 11163-11176, 2021.

[J11] X. Yuan, J. Chen, **K. Zhang**, Y. Wu, and T. Yang, "A Stable AI-based Binary and Multiple Class Heart Disease Prediction Model for IoMT", IEEE Transactions on Industrial Informatics, vol. 18, no. 3, pp: 2032-2040, 2021.

[J12] W. Li, Z. Su, and **K. Zhang**, "Security Solutions for IoT-Enabled Applications Against Disease Pandemic", IEEE Internet of Things Magazine, vol. 4, no. 4, pp: 100-106, 2021.

[J13] H. Wang, K. Fan, **K. Zhang**, Z. Wang, H. Li, and Y. Yang, "Secure and Efficient Data Privacy-preserving Scheme for Mobile Cyber Physical Systems", accepted by IEEE Internet of Things Journal.

[J14] B. Wei, K. Li, W. Luo, W. Xu, J. Zhang, and **K. Zhang**, "No Need of Data Pre-processing: A General Framework for Radio-Based Device-Free Context Awareness", ACM Transactions on Internet of Things, vol. 2, no. 4, pp: 1-26, 2021.

[J15] Q. Xu, Z. Su, **K. Zhang**, and S. Yu, "Fast Containment of Infectious Diseases with E-healthcare Mobile Social Internet of Things", IEEE Internet of Things, vol. 8, no. 22, pp: 16473-16485, 2021.

[J16] L. Lei, Y. Tan, K. Zheng, S. Liu, **K. Zhang**, and X. Shen, "Deep Reinforcement Learning for Autonomous Internet of Things: Model, Applications and Challenges", accepted by IEEE Communications Surveys & Tutorials.

[J17] Y. Tan, C. Hu, **K. Zhang**, K. Zheng, E. Davis, and J. Park, "LSTM-based Anomaly Detection for Non-linear Dynamical System", accepted by IEEE Access.

[J18] W. Li, Z. Su, **K. Zhang**, and A. Benslimane, "Defending Malicious Check-in Using Big Data Analysis of Indoor Positioning System: An Access Point Selection Approach", accepted by IEEE Transactions on Network Science and Engineering.

[J19] W. Li, Z. Su, **K. Zhang**, and Q. Xu, "Abnormal Crowd Traffic Detection with Crowdsourcing-based RSS Fingerprint Position in Heterogeneous Communications Networks", accepted by IEEE Transactions on Network Science and Engineering.

[J20] H. Yang*, **K. Zhang**, K. Zheng, Y. Qian, "Leveraging Linear Quadratic Regulator Cost and Energy Consumption for Ultra-Reliable and Low-Latency IoT Control Systems", IEEE Internet of Things Journal, vol.7 no.9, pp:8356-8371, 2020.

[J21] S. Shen*, **K. Zhang**, S. Ci, and Y. Zhou, "Security in Edge-Assisted Internet-of-Things: Challenges and Solutions", Science China Information Sciences (SCIS), vol.63, pp:220302, 2020.

[J22] M. Huang, **K. Zhang**, Z. Zeng, T. Wang, and Y. Liu, "An AUV-assisted Data Gathering Scheme based on Clustering and Matrix Completion for Smart Ocean", IEEE Internet-of-Things Journal, vol. 7, no. 10, pp: 9904-9918, 2020.

[J23] K. Fan, K. Zhang, Y. Yang, and H. Li, "A Secure and Verifiable Data Sharing Scheme Based on Blockchain in Vehicular Social Networks", IEEE Transactions on Vehicular Technology, vol.69, no.6, pp:5826-5835, 2020.

[J24] D. Chen, N. Zhang, N. Cheng, **K. Zhang**, Z. Qin, and X. Shen, "Physical Layer based Message Authentication with Secure Channel Codes", accepted by IEEE Transactions on Dependable and Secure Computing.

[J25] H. Yang*, K. Zheng, **K. Zhang**, and Y. Qian, "Joint Frame Design and Resource Allocation for Ultra-Reliable and Low-Latency Vehicular Networks", IEEE Transactions on Wireless Communications,vol. 19, no. 5, pp: 3607-3622, 2020.

[J26] H. Yang*, K. Zheng, **K. Zhang**, J. Mei, and Y. Qian, "Ultra-Reliable and Low-Latency Communications for Connected Vehicles: Challenges and Solutions", IEEE Network, vol. 34, no. 3, pp: 92-100, 2020.

[J27] J. Ni, **K. Zhang**, Q. Xia, X. Lin, and X. Shen, "Enabling Strong Privacy Preservation and Accurate Task Allocation for Mobile Crowdsensing", IEEE Transactions on Mobile Computing, vol. 19, no. 6, pp: 1317-1331, 2020.

[J28] K. Fan, Q. Luo, **K. Zhang**, and Y. Yang, "Cloud-based lightweight secure RFID mutual authentication protocol in IoT", Information Sciences, vol. 527, pp: 329-340, 2020.

[J29] Q. Xu, Z. Su, Q. Zheng, M. Luo, B. Dong, and **K. Zhang**, "Game Theoretical Secure Caching Scheme in Multi-homing Edge Computing-enabled Heterogeneous Networks", IEEE Internet of Things Journal, vol. 6, no. 3, pp: 4536-4546, 2019.

[J30] W. Tang, **K. Zhang**, J. Ren, Y. Zhang, and X. Shen, "Flexible and Efficient Authenticated Key Agreement Scheme for BANs Based on Physiological Features", IEEE Transactions on Mobile Computing, vol. 18, no. 4, pp: 845-856, 2019.

[J31] Z. Qin, L. Hu, N. Zhang, D. Chen, **K. Zhang**, Z. Qin, and K. Choo, "Learning Aided User Identification Using Smartphone Sensors for Smart Homes", IEEE Internet of Things Journal, vol. 6, no. 5, pp: 7760-7772, 2019.

[J32] W. Tang, **K. Zhang**, J. Ren, Y. Zhang, and X. Shen, "Privacy-Preserving Task Recommendation with Win-win Incentives for Mobile Crowdsourcing", Information Science, vol. 527, pp: 477-492, 2020.

[J33] Q. Jiang, X. Huang, N. Zhang, **K. Zhang**, X. Ma, and J. Ma, "Shake to Communicate: Secure Handshake Acceleration-based Pairing Mechanism for Wrist Worn Devices", IEEE Internet of Things Journal, vol. 6, no. 3, pp: 5618-5630, 2019.

[J34] P. Yuan, K. Zheng, X. Xiong, **K. Zhang**, and L. Lei, "Performance modeling and analysis of a Hyperledger-based system using GSPN", Computer Communications, vol. 153, pp: 117-124, 2020.

[J35] Z. Yang, **K. Zhang**, L. Lei, and K. Zheng, "A Novel Classifier Exploiting Mobility Behaviors for Sybil Detection in Connected Vehicle Systems", IEEE Internet of Things Journal, vol. 6, no. 2, pp: 2626 - 2636, 2019.

[J36] J. Ni, **K. Zhang**, X. Lin, and X. Shen, "Balancing Security and Efficiency for Smart Metering against Misbehaving Collectors", IEEE Transactions on Smart Grid, Vol.10 , No. 2, pp: 1225 - 1236, 2019.

[J37] **K. Zhang**, X. Liang, J. Ni, K. Yang, and X. Shen, "Exploiting Social Network to Enhance Human-to-Human Infection Analysis Without Privacy Leakage", IEEE Transactions on Dependable and Secure Computing, Vol. 15, No. 4, pp: 607-620, 2018.

[J38] D. Chen, N. Zhang, R. Lu, X. Fang, **K. Zhang**, Z. Qin, and X. Shen, "An LDPC code based physical layer message authentication scheme with prefect security", IEEE Journal on Selected Areas in Communications, vol. 36, no.4, pp: 748-761, 2018.

[J39] X. Yuan, C. Li, Q. Ye, **K. Zhang**, N. Cheng, N. Zhang, and X. Shen, "Performance Analysis of IEEE 802.15. 6-Based Coexisting Mobile WBANs With Prioritized Traffic and Dynamic Interference", IEEE Transactions on Wireless Communications, Vol. 17, No. 8, pp: 5637-5652, 2018.

[J40] K. Fan, J. Yin, **K. Zhang**, H. Li, and Y. Yang, "EARS-DM: Efficient Auto Correction Retrieval Scheme for Data Management in Edge Computing", Sensors, Vol. 18, No. 11, pp: 1-16, 2018.

[J41] Y. Wu, X. Chen, J. Shi, K. Ni, L. Qian, L. Huang, and **K. Zhang**, "Optimal Computational Power Allocation in Multi-Access Mobile Edge Computing for Blockchain", Sensors, vol. 18, no. 10, 2018, pp: 1-19.

[J42] Y. Liu, K. Ota, **K. Zhang**, M. Ma, N. Xiong, A. Liu, and J. Long, "QTSAC: An energy-efficient mac protocol for delay minimization in wireless sensor networks", IEEE Access, vol. 6, 2018, pp: 8273-8291.

[J43] H. Teng, **K. Zhang**, M. Dong, K. Ota, A. Liu, M. Zhao, and T. Wang, "Adaptive transmission range based topology control scheme for fast and reliable data collection", Wireless Communications and Mobile Computing, Vol. 2018, pp: 1-21.

[J44] **K. Zhang**, J. Ni, K. Yang, X. Liang, J. Ren, and X. Shen, "Security and Privacy for Smart City Applications: Challenges and Solutions", IEEE Communications Magazine, Vol. 55, No. 1, pp: 122-129, 2017.

[J45] K. Yang, **K. Zhang**, X. Jia, A. Hassan, and X. Shen, "Privacy-Preserving Attribute-Keyword Based Publish-Subscribe Service on Cloud Platforms", Information Sciences, Elsevier, Vol. 387, pp: 116-131, 2017.

[J46] J. Ni, **K. Zhang**, K. Alharbi, X. Lin, N. Zhang, and X. Shen, "Differentially Private Smart Metering with Fault Tolerance and Range-Based Filtering", IEEE Trans.on Smart Grid, Vol. 8, No. 5, pp. 2483-2493, 2017.

[J47] C. Lai, **K. Zhang**, N. Cheng, H. Li, and X. Shen, "SIRC: A Secure Incentive Scheme for Reliable Cooperative Downloading in Highway VANETs", IEEE Transactions on Intelligent Transportation Systems, Vol. 18, No. 6, pp: 1559-1574, 2017.

[J48] J. Ren, Y. Zhang, Q. Ye, K. Yang, **K. Zhang**, and X. Shen, "Exploiting Secure Collaborative Spectrum Sensing for Cognitive Radio Sensor Networks", IEEE Transactions on Wireless Communications, vol.15, no.10, pp.6813-6827, October 2016.

[J49] J. Ren, Y. Zhang, **K. Zhang** (Corresponding Author), and X. Shen, "Adaptive and Channel-aware Detection of Selective Forwarding Attacks in Wireless Sensor Networks", IEEE Transactions on Wireless Communications, vol.15, no.5, pp.3718-3731, May 2016.

[J50] J. Ren, Y. Zhang, **K. Zhang**, A. Liu, J. Chen, and X. Shen, "Lifetime and Energy Hole Evolution Analysis in Data-Gathering Wireless Sensor Networks", IEEE Transactions on Industry Informatics, vol.12, no.2, pp.788-800, March 2016.

[J51] K. Zheng, Z. Yang, **K. Zhang**, P. Chatzimisios, W. Xiang, and K. Yang, "Big Data Driven Optimization for Mobile Networks towards 5G", IEEE Network Magazine, vol.30, no.1, pp.44-51, January 2016.

[J52] **K. Zhang**, X. Liang, R. Lu, and X. Shen, "PIF: A Personalized Fine-grained Spam Filtering Scheme with Privacy Preservation in Mobile Social Networks", IEEE Transactions on Computational Social Systems, Vol.2, No.3, pp: 41-52, 2015.

[J53] **K. Zhang**, K. Yang, X. Liang, Z. Su, X. Shen, and H. Luo, "Security and Privacy for Mobile Healthcare Networks from Quality-of-Protection Perspective", IEEE Wireless Communications, vol.22, no.4, pp:104-112, 2015.

[J54] Q. Xu, Z. Su, **K. Zhang**, P. Ren, and X. Shen, "Epidemic Information Dissemination in Mobile Social Networks with Opportunistic Links", IEEE Transactions on Emerging Topics on Computing, vol.3, no.3, pp.399-409, September 2015.

[J55] K. Yang, **K. Zhang**, J. Ren and X. Shen, "Security and Privacy in Mobile Crowdsourcing Networks: Challenges and Opportunities", IEEE Communications Magazine, vol.53, no.8, pp.75-81, 2015.

[J56] J. Ren, Y. Zhang, **K. Zhang**, and X. Shen, "Exploiting Mobile Crowdsourcing for Pervasive Cloud Services: Challenges and Solutions", IEEE Communications Magazine, vol.53, no.53, pp.98-105, 2015.

[J57] J. Ren, Y. Zhang, **K. Zhang**, and X. Shen, "SACRM: Social Aware Crowdsourcing with Reputation Management in Mobile Sensing", Computer Communications, Elsevier, vol.65, pp.55-65, 2015.

[J58] N. Zhang, N. Cheng, A. Gamage, **K. Zhang**, J. W. Mark, X. Shen, "Cloud Assisted HetNets Toward 5G Wireless Networks", IEEE Communications Magazine, vol.53, no.6, pp.59-65, 2015.

[J59] **K. Zhang**, X. Liang, R. Lu, and X. Shen, "Exploiting Multimedia Services in Mobile Social Network from Security and Privacy Perspectives", IEEE Communications Magazine, vol.52, no.3, pp.58-65, 2014.

[J60] **K. Zhang**, X. Liang, R. Lu, and X. Shen, "Sybil Attacks and Their Defenses in the Internet of Things", IEEE Internet of Things Journal, vol.1, no.5, pp.372-383, 2014.

[J61] **K. Zhang**, X. Liang, M. Barua, R. Lu, and X. Shen, "PHDA: A Priority Based Health Data Aggregation with Privacy Preservation for Cloud Assisted WBANs", Information Sciences, Elsevier, Vol.284, pp: 130-141, 2014.

[J62] C. Lai, H. Li, X. Liang, R. Lu, **K. Zhang**, and X. Shen, "CPAL: A Conditional Privacy-Preserving Authentication with Access Linkability for Roaming Service", IEEE Internet of Things Journal, vol. 1, no. 1, pp.46-57, 2014.

[J63] X. Liang, **K. Zhang**, X. Shen, and X. Lin, "Security and Privacy in Mobile Social Networks: Challenges and Solutions", IEEE Wireless Communications, vol.21, no.1, pp.33-41, 2014.

[J64] J. Qiao, X. Shen, J. W. Mark, B. Cao, Z. Shi, and **K. Zhang**, "CSMA/CA-based Medium Access Control for Indoor Millimeter Wave Networks", Wireless Communications and Mobile Computing, Wiley, pp.1-15, 2014.

[J65] X. Liang, X. Li, **K. Zhang**, R. Lu, X. Lin, and X. Shen, "Fully Anonymous Profile Matching in Mobile Social Networks," IEEE Journal on Selected Areas in Communications, vol.31, no.9, pp.641-655, 2013.

[J66] X. Liang, **K. Zhang**, R. Lu, X. Lin, and X. Shen, "EPS: An Efficient and Privacy-Preserving Service Searching Scheme for Smart Community," IEEE Sensors Journal, vol.13, no.10, pp.3702-3710, 2013.

[J67] M. Wen, R. Lu, **K. Zhang**, J. Lei, X. Liang, and X. Shen, "PaRQ: A Privacy-Preserving Range Query Scheme Over Encrypted Metering Data for Smart Grid", IEEE Transactions on Emerging Topics in Computing, vol.1, no.1, pp.178-191, 2013.

[J68] M. Wen, **K. Zhang**, J. Lei, X. Liang, and X. Shen, "CIT: A Credit-based Incentive Tariff Scheme with Fraud-traceability for Smart Grid", Security and Communication Networks, pp.1-10, November 2013.

[J69] H. Zhao, **K. Zhang**, J. Zhu, and D. Li, "Error Analysis and Improvement of Ultrasonic Distance Measuring based on TDOA", Journal of Northeastern University (Natural Science), pp.935-938, July 2011.

[J70] H. Zhao, **K. Zhang**, J. Zhu, and D. Li, "Application of Kalman Filtering in Node Localization in WSN", Journal of Northeastern University (Natural Science), pp.802-805, June 2011.

[J71] D. Li, H. Zhao, J. Zhu, and **K. Zhang**, "An Analysis of Spatial Multiplexing in Mobile Wireless Sensor Networks", Journal of Northeastern University (Natural Science), pp.1713-1716, December 2010.

Refereed Conference Papers
(Student Advisees are marked with*)

[C1] C. Yu*, S. Shen*, S. Wang, **K. Zhang**, and H. Zhao, "Efficient Multi-Layer Stochastic Gradient Descent Algorithm for Federated Learning in E-health", Proc. of IEEE of ICC'22, Seoul, Korea, May 16-20, 2022.

[C2] S. Shen*, C. Yu*, **K. Zhang**, and S. Ci, "Collaborative Edge Caching with Personalized Modeling of Content Popularity over Indoor Mobile Social Networks", Proc. of IEEE of ICC'22, Seoul, Korea, May 16-20, 2022.

[C3] W. Huang, W. Tang, **K. Zhang**, H. Zhu, and Y. Zhang, "Thwarting Unauthorized Voice Eavesdropping via Touch Sensing in Mobile Systems", Proc. of IEEE Infocom'22, virtual conference, May 2-5, 2022.

[C4] C. Yu*, S. Shen*, **K. Zhang**, H. Zhao, and Y. Shi, "Energy-Aware Device Scheduling for Joint Federated Learning in Edge-assisted Internet of Agriculture Things", Proc. of IEEE WCNC'22, Austin, TX, April 10-13, 2022.

[C5] Y. Jiang*, K. Zhang, Y. Qian, and R. Hu, "Preserving Location Privacy and Accurate Task Allocation in Edge-assisted Mobile Crowdsensing", Proc. of IEEE WCNC'22, Austin, TX, April 10-13, 2022.

[C6] Y. Jiang, **K. Zhang**, Y. Qian, and R. Hu, "Cooperative Task Allocation in Edge Computing Assisted Vehicular Crowdsensing", Proc. of IEEE Globecom'21, Madrid, Spain, December 7-11, 2021.

[C7] W. Yao, **K. Zhang**, C. Yu, and H. Zhao, "Exploiting Ensemble Learning for Edge-assisted Anomaly Detection Scheme in e-healthcare System", Proc. of IEEE Globecom'21, Madrid, Spain, December 7-11, 2021.

[C8] S. Shen, C. Yu, **K. Zhang**, and S. Ci, "Exploiting Feature Interactions for Malicious Website Detection with Overhead-accuracy Tradeoff", Proc. of IEEE ICC'21, Montreal, QC, Canada, June 2021.

[C9] S. Shen*, C. Yu*, **K. Zhang**, X. Chen, H. Chen, and S. Ci, "Communication-Efficient Federated Learning for Connected Vehicles with Constrained Resources", in Proc. of IEEE IWCMC, Harbin, China, June 28-July 2, 2021.

[C10] Y. Jiang*, **K. Zhang**, Y. Qian, and R. Hu, "Efficient and Privacy-preserving Distributed Learning in Cloud-Edge Computing Systems", ACM Workshop on Wireless Security and Machine Learning (WiseML), June 28-July 2, 2021.

[C11] C. Guo, Y. Yang, Y. Zhou, **K. Zhang**, and S. Ci, "A Quantitative Study of Energy Consumption for Embedded Security", Proc. of IEEE WCNC'21, Nanjing, China, March 29-April 1, 2021.

[C12] Y. Jiang*, **K. Zhang**, Y. Qian, and L. Zhou, "An Optimization Framework for Privacy-preserving Access Control in Cloud-Fog Computing Systems", Proc. of IEEE VTC'20-Fall, Victoria, BC, Canada, October 2020.

[C13] W. Li, Z. Su, **K. Zhang**, A. Benslimane, "Defending Malicious Check-in Based on Access Point Selection for Indoor Positioning System", Proc. of IEEE ICC'20, Ireland, June 7-11, 2020 (**Best Paper Award**).

[C14] X. Yuan, J. Han, J. Pan, **K. Zhang**, C. Li, and Q. Ye, "2TM-MAC: A Two-Tier Multi-channel Interference Mitigation MAC Protocol for Coexisting WBANs", Proc. of IEEE Globecom'19, Waikoloa, HI, USA, December 9-13, 2019.

[C15] Q. Xu, Z. Su, Y. Wang, and **K. Zhang**, "Secure Edge Caching for Layered Multimedia Contents in Heterogeneous Networks", Proc. of IEEE Globecom'19, Waikoloa, HI, USA, December 9-13, 2019.

[C16] H. Yang*, **K. Zhang**, K Zheng, and Y. Qian, "Secure Edge Caching Placement and Delivery for Ultra-Reliable and Low-Latency Vehicular Networks", IEEE Globecom Workshop on Advanced Mobile Edge/Fog Computing for 5G Mobile Networks and Beyond, Waikoloa, HI, USA, December 9-13, 2019.

[C17] S. Shen*, **K. Zhang**, S. Ci, and X. Liang, "Lifecycle Prediction of Second Use Electric Vehicle Batteries Based on ARIMA Model", IEEE Globecom Workshop on Cyber-Physical Energy System for Sustainable ICT (CYPESS), Waikoloa, HI, USA, December 9-13, 2019.

[C18] X. Yuan, Z. Ma, W. Li, H. Wang, C. Li, and **K. Zhang**, "An IEEE IEEE 802.15.6-Based MAC Frame Aggregation Approach for Wireless Body Area Networks", in Proc. of IEEE WCSP, Xi'an, China, October 2019.

[C19] Y. Wang, Z. Su, and **K. Zhang**, "A Secure Private Charging Piles Sharing Scheme with Electric Vehicles in Energy Blockchain", in Proc. of IEEE **BigDataSE** — The 13th IEEE International Conference on Big Data Science and Engineering, Rotorua, New Zealand, 5-8 August, 2019, (**Best Paper Award**).

[C20] Z. Su, Q. Xu, and **K. Zhang**, "HMM Based Cache Pollution Attack Detection for Edge Computing Enabled Mobile Social Networks", in Proc. of IEEE **ICC** — IEEE International Conference on Communications, Shanghai, China, May 2019.

[C21] M. Hadian, T. Altuwaiyan, X. Liang, B. Sheng and **K. Zhang**, "SmartEye: Mobile Device Proximity Monitoring via Wireless Signal Analysis", in Proc. of IEEE **ICNC** — International Conference on Computing, Networking and Communications, Honolulu, Hawaii, USA, February 18-21, 2019.

[C22] Y. Wu, J. Shi, X. Chen, K. Ni, L. Qian, L. Huang, and **K. Zhang**, "Optimal Multi-Access Computation Offloading for Mobile Blockchain", in Proc. of **ICCS** — IEEE International Conference on Communication Systems, Chengdu, China, Dec. 19-21, 2018.

[C23] W. Li, **K. Zhang**, Z. Su, R. Lu, and Y. Wang, "Anomalous Path Detection for Spatial Crowdsourcing based Indoor Navigation System", in Proc. of IEEE **Globecom** — Global Communication Conference, Abu Dahbi, UAE, December 9-13,, 2018.

[C24] 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", in Proc. of IEEE **ICC** — International Conference on Communications, Kansas City, MO, May 20-24, 2018.

[C25] Q. Li, **K. Zhang**, M. Cheffena, and X. Shen, "Channel-based Sybil Detection in Industrial Wireless Sensor Networks: a Multi-kernel Approach", in Proc. of IEEE **Globecom** — Global Communication Conference, Singapore, Dec. 4-8, 2017.

[C26] W. Tang, **K. Zhang**, J. Ren, Y. Zhang, and X. Shen, "Lightweight and Privacy-preserving Fog-assisted Information Sharing Scheme for Health Big Data", in Proc. of IEEE **Globecom** — Global Communication Conference, Singapore, Dec. 4-8, 2017.

[C27] Q. Li, **K. Zhang**, M. Cheffena, and X. Shen, "Channel-based Sampling Rate and Queuing State Control in Delay-Constraint Industrial WSNs", in Proc. of IEEE **Globecom** — Global Communication Conference, Singapore, Dec. 4-8, 2017.

[C28] D. Chen, N. Cheng, N. Zhang, **K. Zhang**, Z. Qin, and X. Shen, "Multi-Message Authentication over Noisy Channel with Polar Codes" (invited paper), in Proc. of IEEE **MASS** — International Conference on Mobile Ad Hoc and Sensor Systems, Orlando, Florida, USA, October 22-25, 2017.

[C29] J. Ni, **K. Zhang**, X. Lin, Q. Xia, and X. Shen, "Privacy-Preserving Mobile Crowdsensing for Located-Based Applications", in Proc. of IEEE **ICC** — International Conference on Communications, Paris, France, May 21-25, 2017.

[C30] Q. Li, **K. Zhang**, M. Cheffena, and X. Shen, "A Measurement-based Boundary Estimation Approach for Localization in Industrial WSNs", in Proc. of IEEE **ICC** — International Conference on Communications, Paris, France, May 21-25, 2017.

[C31] Y. He, **K. Zhang**, H. Wang, F. Li, B. Niu, and H. Li, "Impact factor-based group recommendation scheme with privacy preservation in MSNs", in Proc. of IEEE **ICC** — International Conference on Communications, Paris, France, May 21-25, 2017.

[C32] J. Ni, X. Lin, **K. Zhang**, Y. Yu, and X. Shen, "CPARN: Cloud-Based Privacy-Preserving Parking Navigation in Vehicular Ad Hoc Networks", in Proc. of **Securecomm** — EAI International Conference on Security and Privacy in Communication Networks, 2016 (**Best Paper Award**).

[C33] J. Ni, X. Lin, **K. Zhang**, and Y. Yu, "Secure and Deduplicated Spatial Crowdsourcing: A Fog-Based Approach", in Proc. of IEEE **Globecom** — Global Communication Conference, Washington D.C., USA, December, 2016.

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[C36] J. Ni, X. Lin, **K. Zhang**, Y. Yu, and X. Shen, "Device-Invisible Two-Factor Authenticated Key Agreement for BYOD", in Proc. of IEEE **ICCC** — IEEE/CIC International Conference on Communications in China, Chengdu, China, July, 2016.

[C37] Q. Li, **K. Zhang**, M. Cheffena, and X. Shen, "Exploiting Dispersive Power Gain and Delay Spread for Sybil Detection in Industrial WSNs", in Proc. of IEEE **ICCC** — IEEE/CIC International Conference on Communications in China, Chengdu, China, July, 2016.

[C38] J. Ni, **K. Zhang**, X. Lin, H. Yang, and X. Shen, "AMA: Anonymous Mutual Authentication with Traceability in Carpooling Systems", in Proc. of IEEE **ICC** — International Conference on Communications, Kuala Lumpur, Malaysia, May, 2016.

[C39] J. Ni, **K. Zhang**, X. Lin, and X. Shen, "EDAT: Efficient Data Aggregation without TTP for Privacy-Assured Smart Metering", in Proc. of IEEE **ICC** — International Conference on Communications, Kuala Lumpur, Malaysia, May, 2016.

[C40] Z. Su, Q. Xu, **K. Zhang**, K. Yang, and X. Shen, "Dynamic Bandwidth Allocation in Mobile Social Networks with Multiple Homing Access", in Proc. of IEEE **WCSP** — International Conference on Wireless Communications and Signal Processing, Nanjing, China, October, 2015.

[C41] **K. Zhang**, X. Liang, R. Lu, K. Yang, and X. Shen. "Exploiting Mobile Social Behaviors for Sybil Detection", in Proc. of IEEE **INFOCOM** — IEEE International Conference on Computer Communications (Acceptance Rate: 19%), Hong Kong, China, pp.271-279, April, 2015.

[C42] M. He, **K. Zhang**, X. Shen, "PMQC: A Privacy-Preserving Multi-Quality Charging Scheme in V2G network", in Proc. of IEEE **Globecom** — Global Communication Conference, Austin, Texas, USA, pp.675-680, December, 2014.

[C43] J. Ren, Y. Zhang, **K. Zhang**, X. Shen, "Exploiting Channel-Aware Reputation System Against Selective Forwarding Attacks in WSNs", in Proc. of IEEE **Globecom** — Global Communication Conference, Austin, Texas, USA, pp.330-335, December, 2014.

[C44] **K. Zhang**, R. Lu, X. Liang, J. Qiao, and X. Shen, "PARK: A Privacy-preserving Aggregation Scheme with Adaptive Key Management for Smart Grid", in Proc. IEEE **ICCC** — IEEE/CIC International Conference on Communications in China, Xi'An, China, pp.236-241, August 2013.

[C45] **K. Zhang**, X. Liang, R. Lu, and X. Shen, "SAFE: A Social Based Updatable Filtering Protocol with Privacy-preserving in Mobile Social Networks", in Proc. of IEEE **ICC** — IEEE International Conference on Communications, Budapest, Hungary, pp.6045-6049, June 2013.

[C46] Y. Liu, Z. Shi, **K. Zhang**, Y. Zheng, R. Lu, X Shen, "A Novel Low-power Mixed-mode Implementation of Weight Update in Particle PHD Filters", in Proc. of IEEE **WCNC** — IEEE Wireless Communications and Networking Conference, Shanghai, China, pp.4647-4652, April 2013, (**Best Paper Award**).

[C47] **K. Zhang**, X. Liang, R. Lu, X. Shen, and H. Zhao, "VSLP: Voronoi-Socialspot-Aided Packet Forwarding Protocol with Receiver Location Privacy in MSNs", in Proc. IEEE **Globecom** — Global Communication Conference, Anaheim, California, USA, pp.348-353, December, 2012.

[C48] X. Ding, H. Zhao, J. Zhu, **K. Zhang**, and D. Li, "A Novel Localization Algorithm Based on RSSI for Wireless Sensor Networks", in Proc. of **WiCOM** — International Conference on Wireless Communications, Networking and Mobile Computing, Wuhan, China, pp.1-4, September 2011.

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FUNDED PROJECTS

[F1] **Co-PI**, *An Intelligent Unmanned Aerial Application System for Site-Specific Weed Management*
Funded by Deptment of Agriculture and National Institute of Food and Agriculture (NIFA), $221,396 of total $453,775, 7/2021-6/2024.

[F2] **Co-PI**, *CPS:Medium: CPS-Enabled Variable Rate Technology*
Funded by National Science Foundation (NSF) Cyber Physical System (CPS) program and NIFA, $153,745 shares of total $935,756, 4/2021-3/2024.

[F3] **Co-PI**, *SCC-PG: Smart & Connected Childcare*
Funded by National Science Foundation, $23,487 shares of total $149,305.00, 9/2020-8/2021.

[F4] **PI**, *Cybersecurity for Healthcare System*
Funded by Nebraska Foundation, $25,000, 5/2020-9/2020.

[F5] **PI**, *Privacy-preserving Mobile Health System Integrated with Social Network for Infectious Disease Analysis*
Funded by University of Nebraska - Research Council Faculty Seed Grants, $10,000, 1/2018-12/2018.

[F6] **Co-PI**, *E-Healthcare Solutions in the Treatment of Trauma using EMDR*
Funded by Blue Cross/Blue Shield, $9,856 shares of total $22,756, 5/2018-4/2022.

PROFESSIONAL SERVICES

Editor/Editor-in-Chief
– Editor-in-Chief, Encyclopedia of Wireless Networks, Springer
– Associate Editor, IEEE Transactions on Wireless Communications
– Associate Editor, IEEE Communications Surveys & Tutorials
– Associate Editor, IEEE Internet of Things Journal
– Associate Editor, Peer-to-Peer Networking and Applications
– Associate Editor, IEEE Access
– Guest editor, Wireless Communications and Mobile Computing, Special Issue: "Crowdsourcing for Mobile Networks and IoT"
– Guest editor, IEEE Access, Special Issue: "Security and Privacy for IoT and Cloud Computing"
– Guest editor, Security and Communication Networks, Special Issue "Security and Privacy in Internet of Medical Things (IoMT)"

Chair/Co-chair
– Technical Program co-chair, 17th WiMob Conference (IEEE International Conference on Wireless and Mobile Computing, Networking and Communications)
– Symposium co-chair, IEEE International Conference on Communications (ICC), CISS: Symposium on Communications and Information System Security, 2023
– Symposium co-chair, IEEE/CIC International Conference on Communications in China (ICCC), CISS: Symposium on Communications and Information System Security, 2019
– Symposium co-chair, IEEE/CIC International Conference on Communications in China (ICCC), SNBD: Social Networks and Big Data Symposium, 2018
– Chair, International Workshop on Big Data and Edge Computing for Smart City, IEEE WiMob, 2019
– Chair, International Workshop on Big Data and Edge Computing for Smart City, IEEE MoWNET, 2018

Technical Program Committee
– IEEE Globecom 2015 - 2023

- IEEE ICC 2014 - 2024
- IEEE Infocom 2016 - 2022
- WCSP 2018
- J-SPAN 2018
- IEEE COMNETSAT 2018
- IEEE/CIC ICCC 2018, PSC: Privacy and Security in Communications Symposium
- Track: Mobile Network Applications and Services, IEEE VTC-Spring, 2017
- Track: Wireless Networks and Security, IEEE VTC-Spring, 2017
- Workshop on Security, Privacy, and Trustworthiness in Medical Cyber Physical Systems (MedSPT), IEEE CHASE, 2016 (Also serve as a publicity co-chair of MedSPT)
- Track: Wireless Networks: Protocols, Security, and Services, IEEE VTC-Fall, 2016
- Track: Wireless Networks: Protocols, Security, and Services, IEEE VTC-Spring, 2016
- Track: Internet Service and Applications, ICNC, 2016

Panelist of Funding Agency
- National Science Foundation, Smart and Connected Health Program
- National Science Foundation, Office of Advanced Cyberinfrastructure (OAC)

Reviewer of Refereed Journals
- ACM Transactions on Multimedia Computing, Communications, and Applications
- IEEE Transactions on Parallel and Distributed Systems
- IEEE Transactions on Multimedia
- IEEE Transactions on Vehicular Technologies
- IEEE Transactions on Cloud Computing
- IEEE Transactions on Systems, Man and Cybernetics: Systems
- IEEE Communications Magazine
- IEEE Wireless Communications Magazine
- IEEE Network Magazine
- IEEE Internet of Things Journal
- Peer-to-Peer Networking and Applications (Springer)
- Security Communication Networks
- KSII Transactions on Internet of Information Systems
- Infocom 2013, 2014, 2015, 2016, 2017, 2018, 2019
- ICC 2013, 2014, 2015, 2016, 2017, 2018, 2019
- Globecom 2013, 2014, 2015, 2016, 2017, 2018
- WCNC 2013, 2014
- ICCC 2014, 2015, 2016, 2017, 2018
- ICNC 2015
- ICICS 2015
- Milcom 2014

Session Chair
- Network and System Security, and Jamming sessions, IEEE Globecom 2016, Washington D.C., USA, December 2016
- Network Security, and Wireless Networks Poster sessions, VTC2016-Fall, Montreal, Canada, September 2016

TEACHING AND MENTORING EXPERIENCES

Teaching Experiences

- **Instructor**   **Spring 2018 - 2024**
  Department of Electrical and Computer Engineering, University of Nebraska-Lincoln
  Undergraduate/Graduate course: ECEN4950/8510 "Advanced Topics in Cyber Security"

- **Instructor**   **Fall 2018, 2019**
  Department of Electrical and Computer Engineering, University of Nebraska-Lincoln
  Undergraduate/Graduate course: ECEN4950/8510 "Advanced Topics in Network Design"

- **Instructor** **Fall 2020 - 2023**
  Department of Electrical and Computer Engineering, University of Nebraska-Lincoln
  Undergraduate/Graduate course: ECEN3520 "Electronic Circuit - II"
- **Certificate of Learning by Design** **Spring 2019**
  College of Engineering, University of Nebraska-Lincoln
  This Teaching Development series include:
    – Six seminars on university teaching
    – Topics on teaching strategies, learning goals, assessment, rubrics, learning plan, and Canvas design

Mentoring Experience

- Wenmiao Zhang, PhD student, University of Nebraska-Lincoln January 2023—Present
- Zhenyu Meng, PhD student, University of Nebraska-Lincoln August 2021—Present
- Chong Yu, PhD student, University of Nebraska-Lincoln August 2019—August 2023
  initial employment: Assistant Professor, University of Cincinnati
- Shuaiqi Shen, PhD student, University of Nebraska-Lincoln August 2018—August 2022
  initial employment: Assistant Professor, University of Wisconsin - Milwaukee
- Yili Jiang, PhD student, co-supervised with Professor Yi Qian,
  University of Nebraska-Lincoln August 2017—August 2022
  initial employment: Assistant Professor, University of Mississippi
- Jacob Cleveland, Justine Linscott, Undergraduate student,
  University of Nebraska-Lincoln May 2021—May 2022
- Jin Li, visiting graduate student, from Central South University, China September 2019—February 2020
- Xuemei Xiang, visiting graduate student, from Central South University, China October 2019—March 2020
- Xuan Long, visiting graduate student, from Central South University, China September 2019—March 2020
- Haojun Yang, visiting PhD student, co-supervised with Professor Yi Qian,
  University of Nebraska-Lincoln October 2018—October 2019
- Xintong (Tony) Yu, intern student, University of Nebraska-Lincoln May 2018—August 2018

Capstone Project Advisor

- Jacob Cleveland, Justine Linscott, Nikita Estrada, Yutara Matsuda, University of Nebraska-Lincoln October 2021—May 2022
  Project: Data Logger for Agriculture Moisture Sensing

- Eric Jones, Andrew Krausmark, Tyler Richling and Joshua Hoonger, University of Nebraska-Lincoln October 2020—May 2021
  Project: Agriculture Sensor Network

- Michael Feldhacker and John Steinauer, University of Nebraska-Lincoln December 2018—May 2019
  Project: 5G network and its security

MEMBERSHIPS

IEEE Member

Immigration Status

I am a lawful permanent resident of United States of America.