

## Dr. Kewei Sha

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### Research Interests

Distributed Systems, Mobile Computing, Wireless Sensor Networks, Cyber-Physical Systems,  
Cloud Computing, Internet of Things, Security and Privacy

### Employment

Assistant Professor, University of Houston, Clear Lake, 08/2015 -  
Chair, Department of Technology and Software Engineering, 07/2013-07/2015  
Associate Professor, Oklahoma City University, 04/15/2015 – 07/31/2015  
Assistant Professor, Oklahoma City University, 07/2013-04/14/2015  
Visiting Assistant Professor, Oklahoma City University, 08/2008-05/2013  
Visiting Professor, Xidian University, China, 06/2008-07/2008  
Visiting Professor, Nanjing University of Posts & Telecommunications, 07/2014-08/2014  
Research Assistant, Wayne State University, 08/2006-08/2008  
Teaching Assistant, Wayne State University, 08/2003-08/2006

### Education

**Ph.D.** in Computer Science, 09/2003-11/2008  
*Wayne State University*, Detroit, MI  
**Advisor:** Dr. Weisong Shi

**M.S.** in Computer Science, 09/2003-12/2006  
*Wayne State University*, Detroit, MI  
**Advisor:** Dr. Weisong Shi

**B.S.** in Computer Science, 09/1997-07/2001  
*East China University of Science and Technology*, Shanghai, China

### Publications

#### **Book & Book Chapters**

1. **Kewei Sha**, Aaron Striegel and Min Song, “*Advances in Computer Communications and Networks -- from green, mobile, pervasive networking to big data computing*”, edited book, River Publisher, in preparation
2. **Kewei Sha**, Aaron Striegel and Min Song, “*Advances in Computer Communications and Networks – Reliability and Security*”, edited book, River Publisher, in preparation
3. Wenjia Li, **Kewei Sha** and Sheral Zeadally, “*Routing in Wireless Sensor Network based Cyber-Physical Systems*”, book chapter in *Cyber-Physical System Design with Sensor Networking Technologies*, accepted

4. **Kewei Sha**, “*Data Quality Management in Wireless Sensor Networks: A Consistency Model Based Approach*”, VDM Verlag Dr. Müller, April 2010
5. **Kewei Sha**, Weisong Shi, and Sivakumar Sellamuthu, “*Load Balanced Query Protocols for Wireless Sensor Networks*”, book chapter of the book ”Sensor Networks Operations”, Edited by Shashi Phoha, Thomas F. La Porta and Christopher Griffin, Wiley-IEEE Press, May 2006

### Journals Publications

1. **Kewei Sha**, Naif Alatrash and Zhiwei Wang, “*A Secure Framework to Read Isolated Smart Grid Devices*”, IEEE Transaction of Smart Grid, accepted
2. Shiwen Mao, Honggang Wang, Aaron Striegel, and **Kewei Sha**, “*Editorial: Special Issue on Cognitive, Cellular, and Mobile Networks*”, EAI Endorsed Transactions on Wireless Spectrum, 16(7): e1, January 2016.
3. Abhishek Parakh and **Kewei Sha**, “*Editorial: Privacy, Security and Trust in Mobile and Wireless Systems*”, International Journal of Security and Networks, January 2016
4. **Kewei Sha** and Sherali Zeadally, “*Data Quality in Cyber-Physical Systems*”, ACM Journal on Data and Information Quality, 6(2-3), July 2015
5. **Kewei Sha** and Zhengping Wu, “*Editorial: Privacy, Security and Trust in Mobile Systems*”, Wireless Personal Communications, 73(1), 1-3, 2013
6. Zhiwei Wang, **Kewei Sha** and Wei Lv, “*Slight Homomorphic Signature for Access Controlling in Cloud Computing*”, Wireless Personal Communications (WIRE), 73 (1), 51-61, 2013
7. **Kewei Sha**, Jegnesh Gehlot, and Robert Greve, “*Multipath Routing Techniques in Wireless Sensor Networks, A Survey*”, Wireless Personal Communications (WIRE), 70 (2), 807-829, 2013
8. **Kewei Sha**, Shinan Wang and Weisong Shi, “*RD4: Role-Differentiated Cooperative Deceptive Data Detection and Filtering in VANETs*”, IEEE Transactions on Vehicular Technology (TVT), Vol. 59, No. 3, pp. 1183-1190, March 2010
9. **Kewei Sha** and Weisong Shi, “*Consistency-Driven Data Quality Management in Wireless Sensor Networks*”, Journal of Parallel and Distributed Computing (JPDC), Vol. 68, No. 9, pp. 1207-1221, September 2008.
10. Yong Xi, **Kewei Sha**, Weisong Shi, Loren Schwiebert, and Tao Zhang, “*Probabilistic Adaptive Privacy-Preserving Authentication in Vehicular Networks*”, Journal of Computer Science and Technology (JCST) Vol. 23, No. 6, pp. 916-928, November 2008.
11. Junzhao Du, Weisong Shi, and **Kewei Sha**, “*Asymmetry-Aware Link Layer Services in Wireless Sensor Networks*”, Journal of Embedded Computing, Vol 3, Issue 2, pp. 141-154, 2009
12. **Kewei Sha**, Junzhao Du, and Weisong Shi, “*WEAR: A Balanced, Fault-Tolerant, Energy-Efficient Routing Protocol for Wireless Sensor Networks*”, International Journal of Sensor Networks, Vol 1, No. 2, 2006
13. **Kewei Sha**, Weisong Shi, “*Modeling the Lifetime of Wireless Sensor Networks*”, Sensor Letters, Vol 3, pp. 126-135, 2005

### Conferences and Workshops Publications

1. Tom Darling and **Kewei Sha**, “*REMEDY: Remote Exercise Monitoring using an Evaluative Data sensing sYstem*”, in Proceedings of 17th International Conference on E-health Networking, Application & Services (IEEE Healthcom 2015), October 2015, Boston, USA
2. Junzhao Du, Sicong Liu, Chi Xu, Kai Wang, Hui Liu and **Kewei Sha**, “*Lightweight Construction of the Information Potential Field in Wireless Sensor Networks*”, in Proceedings of International Conference on Computer Communications and Networks (ICCCN), August 2014, Shanghai, China
3. **Kewei Sha**, Chengguang Xu and Zhiwei Wang, “*One-time Symmetric Key Based Cloud Supported Secure Smart Meter Reading*”, in Proceedings of International Conference on Computer Communications and Networks (ICCCN), August 2014, Shanghai, China

4. Myung Ah Park, Gang Qian, Michelle Hepner, **Kewei Sha**, “*A Gender-Inclusive Holistic Approach for IAS Education*”, in Proceedings of the International Conference on Frontiers in Education: Computer Science and Computer Engineering, July 2012, Las Vegas, Nevada, USA
5. Rohit Reddy, **Kewei Sha**, Jegnesh Gehlot and Robert Greve, “*On the Heterogeneity in Mobile Application Development*”, in Proceedings of Oklahoma Research Day, Nov 2011, Lawton, Oklahoma, USA
6. Chang Liu, Junzhao Du, Hui Liu and **Kewei Sha**, “*Sleep-Wakeup Algorithms for Virtual Barriers for Wireless Sensor Networks in 3D Space*”, in Proceedings of The 6th International Conference on Mobile Ad-hoc and Sensor Networks (MSN 2010), Dec 2010, Hangzhou, China
7. Yawei Li, Junzhao Du, Hui Liu and **Kewei Sha**, “*On Sweep Coverage with Minimum Mobile Sensors*”, in Proceedings of The 16th International Conference on Parallel and Distributed Systems (ICPADS 2010), Dec 2010, Shanghai, China
8. Shinan Wang, **Kewei Sha** and Weisong Shi, “*Role-based Deceptive Data Detection and Filtering in WSNs*”, in Proceedings of the 8th ACM/IEEE International Conference on Information Processing in Sensor Networks (IPSN 2009) (2 page summary), April 13-16, 2009, San/Francisco.
9. **Kewei Sha**, Guoxing Zhan, Safwan Al-Omari, Tim Calappi, Weisong Shi and Carol Miller, “*Data Quality and Failures Characterization of Sensing Data in Environmental Applications*”, In Proceedings of CollaborateCom 2008, November 2008.
10. **Kewei Sha**, Guoxing Zhan, Weisong Shi, Mark Lumley, Clairiy Wiholm, and Bengt Arnetz, “*SPA: Smart Phone Assisted Chronic Illness Self-Management with Participatory Sensing*”, In Proceedings of The 2nd International Workshop on Systems and Networking Support for Healthcare and Assisted Living Environments (Healthnet’08), in conjunction with MobiSys’08, June, 2008.
11. **Kewei Sha** and Weisong Shi, “*Modeling Data Consistency in Wireless Sensor Networks*” in Workshop Proceedings of ICDCS 2007 (WWASN 2007), Toronto, June 25-29, 2007
12. Yong Xi, **Kewei Sha**, Weisong Shi, Loren Schwiebert, and Tao Zhang, “*Enforcing Privacy Using Symmetric Random Key-Set in Vehicular Networks*” in Proceedings of the 8th International Symposium on Autonomous Decentralized Systems (ISADS), Sedona AZ, March, 2007
13. **Kewei Sha**, Yong Xi, Weisong Shi, Loren Schwiebert, and Tao Zhang, “*Adaptive Privacy-Preserving Authentication in Vehicular Networks*”, in Proceedings of the First International Conference on Communications and Networking in China (ChinaCom’06), Oct 27, 2006
14. **Kewei Sha** and Weisong Shi, “*On the Effects of Consistency in Data Operations in Wireless Sensor Networks*”, in Proceedings of the 2006 International Conference on Parallel and Distributed Systems (ICPADS 2006), July 12-15, 2006
15. **Kewei Sha**, Weisong Shi, and Orlando Watkins, “*Using Wireless Sensor Networks for Fire Rescue Applications: Requirements and Challenges*”, in Proceedings of the 6th IEEE International Conference on Electro/Information Technology, May 2006
16. Junzhao Du, Weisong Shi, and **Kewei Sha**, “*Asymmetry-Aware Link Quality Services in Wireless Sensor Networks*”, in Proceedings of the 2005 IFIP International Conference on Embedded and Ubiquitous Computing (EUC-05), December 6-9, 2005
17. **Kewei Sha** and Weisong Shi, “*Revisiting the Lifetime of Wireless Sensor Networks*”, in Proceedings of the 2nd International Conference on Embedded Networked Sensor Systems (SenSys’04) (poster), November 3-5, 2004
18. Weisong Shi, Sivakumar Sellamuthu, **Kewei Sha**, and Loren Schwiebert, “*QueryAgent: A General Query Processing Tool for Sensor Networks*”, in Workshop Proceedings of International Conference on Parallel Processing (ICPP’04), Aug 2004

#### Technical Reports Under Submission

1. Aseel Basheer and **Kewei Sha** “*QAAC: Quality-Assure Adaptive Data Compression for Sensor Data*”, under submission
2. Junzhao Du, Sicong Liu, Chi Xu, Kai Wang, Hui Liu and **Kewei Sha**, “*Energy-efficient Algorithm to Construct the Information Potential Field in WSNs*”, IEEE Sensor Journal, under review

## **Work in Progress**

1. Sherari Zeadally and **Kewei Sha**, “*Data Quality in Vehicular Ad Hoc Networks*”, in process
2. **Kewei Sha**, “*GreenShow: A Location-Aware Trade Show Management System*”, Technical Report
3. **Kewei Sha**, “*Supporting Key Mobility in Mobile Systems*”, in process
4. **Kewei Sha**, “*Efficient Key Distribution Scheme for Wireless Sensor Networks*”, in process
5. **Kewei Sha**, “*An Accurate Framework for Exercise Evaluation*”, in process
6. **Kewei Sha**, “*Reliable and Secure Cloud-storage Service Evaluation and Implementation*”, in process
7. **Kewei Sha**, “*Graph based Frequent Pattern Mining*”, in process
8. **Kewei Sha** and Mahanad Ramadhan “*Balanced and Efficient Multipath Routing in Wireless Sensor Networks*”, in process
9. Aseel Basheer and **Kewei Sha** “*Quality-Assure One-Pass Adaptive Data Compression for Streaming Data*”, in process
10. Zhiwei Wang and Kewei Sha “*Security in Edge Computing*”, in process

## **Honors and Awards**

- IEEE Outstanding Leadership Award from ICCCN 2015
- IEEE Outstanding Leadership Award from ICCCN 2014
- Recognition of Workshop Co-Chair from ICCCN 2013
- Distinguished Student Mentor of Meinders School of Business, 2012
- Fellow of the Faculty Teaching Academy at OCU, 2011
- Semi-Finalist in 2012 Oklahoma Governor’s Business Plan Competition (as advisor), 2012
- The 3<sup>rd</sup> Place in 2011 Oklahoma Governor’s Business Plan Competition (as advisor), 2011
- Cambridge Who’s Who, 2008
- Marquis Who's Who in America, 2008
- General Motor Corporations Academic Award, 2008
- Meritorious Prize of International Undergraduate Mathematical Contest on Modeling (MCM), 2000
- First-Rank Award of Mathematics Contest in Modeling (MCM) of China, 1999
- Baogang Fellowship, by Shanghai Ministry of Education, 2000

## **Funding**

- NSF support for ICCCN Student Travel Grant, 2015, PI \$10,000, awarded
- Oklahoma NSF EPSCoR ROA+, 2015, PI \$12,500 awarded
- OCU Summer Undergraduate Research Grant, 2014, PI \$5000 awarded
- OCU Student Professional Fund, 2014-2015 PI \$1600, awarded
- SC’13 HPC Educator Travel Award, 2013, about \$2000, awarded
- Natural Science Foundation of China (NSF-C) Grant No. 61373006, co-PI, awarded

## **Talk**

- *Security Challenges in Internet of Things*, Keynote at International Conference on Wireless Communication and Sensor Network (WCSN 2016), December 2016
- *Security in IoT*, invited talk at University of Nebraska at Omaha, April 2016
- *Energy Efficient Data Quality Management in Wireless Sensor Systems*, invited talk at University of Houston – Clear Lake, May 2015
- *A Secure Framework to Read Isolated Devices in Smart Grid*, invited talk at Howard University, Apr 2015
- *Data Quality Management in WSN*, invited talk at Eastern Washington University, Apr 2015

- *Role-based Deceptive Data Detection in VANET*, invited talk at University of Indianapolis, Feb 2015
- *A Secure Protocol to Read Isolated Smart Grid Devices*, invited talk at Nanjing University of Posts and Communications, July 2014
- *An Efficient Framework for Data Quality Management*, invited talk at Nanjing University of Posts and Communications, July 2014
- *Data Quality in Wireless Sensor Networks*, invited talk at Oklahoma City University, Oct 2013

## **Professional Participation**

### **Professional Membership**

- Member of IEEE, IEEE Communications Society, IEEE TCI and ACM

### **Professional Services**

- **Editorship**
  - **Guest Editor**
    - Special Issue in Mobile Privacy, Security and Trust, Personal Wireless Communications, 2013
    - Special Issue in Privacy, Security and Trust in Mobile Systems, Journal of Security and Network, 2016
    - Special Issue in EAI Endorsed Transactions on Wireless Spectrum, 2016
  - **Associate Editor**
    - GSTF Journal on Computing
  - **Member of Editorial Board**
    - International Journal On Advances in Intelligent Systems
    - International Journal On Advances in Software
    - Wireless Engineering and Technology (WET)
- **IEEE TC Officer/Secretary**
  - Secretary of Technical Committee on the Internet of the IEEE Computer Society (IEEE-CS TCI) (2013 - )
  - Judge of FIRST Robotics Competition, Oklahoma Region, 2013, 2014
- **Conference Organizing Committee & Chair**
  - **Conference General Co-Chair** of the Third International Conference on Wireless Communication and Sensor Network (WCSN 2016)
  - **Technical Program Chair** of The 24th International Conference on Computer Communications and Networks (ICCCN 2015)
  - **Steering Committee Chair** of International Workshop on Privacy, Security and Trust in Mobile and Wireless Systems (MobiPST)
  - **Student Travel Grant Chair** of the 25th International Conference on Computer Communications and Networks (ICCCN 2016)
  - **Workshop General Chair** of The 22nd International Conference on Computer Communications and Networks (ICCCN 2013)
  - **Workshop Co-Chair**
    - The 1<sup>st</sup> International Workshop on Security, Privacy, and Trustworthiness in Medical Cyber Physical Systems (MedSec 2016)
    - The 1<sup>st</sup> International Workshop on Privacy, Security and Trust in Mobile and Wireless Systems (MobiPST 2011)

- The 2<sup>nd</sup> International Workshop on Privacy, Security and Trust in Mobile and Wireless Systems (MobiPST 2012)
    - The 4<sup>th</sup> International Workshop on Privacy, Security and Trust in Mobile and Wireless Systems (MobiPST 2014)
  - **Session Chair**
    - The 24<sup>th</sup> International Conference on Computer Communications and Networks (ICCCN 2015)
    - The 23<sup>th</sup> International Conference on Computer Communications and Networks (ICCCN 2014)
    - The 22<sup>th</sup> International Conference on Computer Communications and Networks (ICCCN 2013)
    - The 3<sup>rd</sup> International Workshop on Context-aware QoS Provisioning and Management for Emerging Networks, Applications and Services (ContextQoS 2013)
    - The 20<sup>th</sup> International Conference on Computer Communications and Networks (ICCCN 2011)
    - The 4<sup>th</sup> International Conference on Collaborative Computing (CollaborateCom 2008)
    - The 5<sup>th</sup> International Conference on Collaborative Computing (CollaborateCom 2009)
  - **Publicity Chair**
    - 2013 International Workshop on Mobile Cloud Computing Technologies and Applications (MCCTA 2013)
    - The 3<sup>rd</sup> International Workshop on Privacy, Security and Trust in Mobile and Wireless Systems (MobiPST 2013)
- **TPC member**
  - The 11th International Conference on Wireless Algorithms, Systems, and Applications (WASA 2016)
  - The IEEE Conference on Local Computer Networks, IEEE LCN 2015,2016
  - The annual International Conference on Distributed Computing in Sensor Systems (DCOSS 2016)
  - International Conference on Security of Smart cities, Industrial Control System and Communications (SSIC 2016)
  - International Conference on Internet of Things and Cloud Computing, ICC'16
  - 1st IEEE International Conference on Collaboration and Internet Computing, IEEE CIC 2015
  - International Conference on Green, Pervasive and Cloud Computing, GPC 2015, 2016
  - The 2015 Global Conference on Information Technology, Computing, and Applications (Global IT 2015)
  - The Third International Symposium on Security in Computing and Communications (SSCC'15)
  - Sixth International Conference on Mobile Computing, Applications and Services (MobiCASE 2014)
  - 5th International Conference on Creative Converged IT (CCIT 2014)
  - IEEE International Conference on High Performance Computing and Communications (IEEE HPCC), 2013, 2014
  - The 2014 FTRA International Symposium on Ubiquitous Green IT Systems (U-GIT 2014)
  - 2014 IEEE International Conference on Systems, Man, and Cybernetics (IEEE SMC 2014)
  - IEEE International Conference on Collaborative Computing: Networking, Applications and Worksharing (CollaborateCom) 2009, 2010, 2011, 2012, 2013, 2014
  - Workshop on Big Data and e-Health, 2014
  - International Conference on Ambient Systems, Networks and Technologies (ANT), 2013

- International Workshop on Internet of Ubiquitous and Pervasive Things (IUPT) 2011, 2012, 2013, 2014
- International Conference on Computer Communications and Networks (ICCCN) 2013
- International Conference on Grid and Pervasive Computing (GPC), 2013
- International Workshop on Data Management for Cyber Physical System (DM-CPS), 2013
- World Conference on Information Systems and Technologies (WorldCIST) 2013
- International Conference on Advanced Collaborative Networks, Systems and Applications (COLLA) 2011, 2012, 2013, 2014
- International Conference on Advanced Engineering Computing and Applications in Sciences (ADVCOMP) 2011, 2012, 2013, 2014
- International Conference on Mobile Web Information Systems (MobiWIS) 2012
- International Workshop on Sensor Networks (SN) 2012
- IEEE International Conference on Computational Science and Engineering (IEEE CSE) 2012, 2013
- IEEE International Conference on Scalable Computing and Communications (IEEE ScalCom) 2012
- IEEE International Conference on Wireless Communications, Networking and Information Security (IEEE WCNIS) 2010
- IEEE International Workshop on Mobile Cyber-Physical Systems (MobiCPS) 2010
- IEEE International Conference on Green Computing and Communications (IEEE GreenCom) 2010
- International Workshop on Wireless Ad hoc and Sensor Networking (WWASN) 2011

### **Experience as Funding Proposal Reviewer**

- University of Central Oklahoma On-campus Interdisciplinary Grant, 2014
- NSF Bluewaters Scholarship, 2014, 2015
- University of Pisa Research Proposal 2008

### **Experience as Journal Referee**

- Computational Intelligence, 2016
- IEEE System Journal, 2015
- IEEE Transactions on Parallel and Distributed Systems (TPDS) 2008, 2010, 2011, 2012, 2013, 2014, 2015, 2016
- IEEE Transactions on Dependable and Secure Computing, 2014
- IEEE Transactions on Computers, 2013
- IEEE Transactions on Intelligent Transportation Systems (TITS), 2013
- International Journal of Security and Networks, 2015
- IET Wireless Sensor Systems, 2015
- ETRI Journal 2014
- Elsevier's Computer Communications Journal (ComNet) 2014
- Ad Hoc Networks 2013, 2014, 2015
- Elsevier's Computer Communications Journal (ComCom) 2008, 2011, 2012, 2013, 2014
- Wireless Personal Communications (WIRE) 2009, 2010, 2011, 2012, 2013, 2014
- Journal of Systems Architecture, 2012, 2013
- Journal of Network and Computer Applications 2013, 2014
- International Journal of Sensor Networks (IJSNet) 2009, 2012, 2013, 2014
- International Journal of Ad Hoc and Ubiquitous Computing 2013
- Journal of Sensors 2009, 2012, 2014, 2015
- Computing (COMP), 2013

- Mobile Networks and Applications (MONE), 2010, 2011, 2013
- International Journal On Advances in Intelligent Systems 2012, 2013, 2014
- International Journal On Advances in Software 2012, 2013, 2014
- International Journal of Parallel, Emergent and Distributed Systems, 2012
- IST 2012
- BMC Bioinformatics, 2012
- International Journal of Systems Science, 2010
- International Journal of Distributed Sensor Networks (IJDSN), 2011
- Journal of Computer Networks and Communications (JCNC), 2011
- Mathematical and Computer Modeling (MCM), 2010, 2011
- International Journal of Internet Protocol Technology (IJIPT) 2010
- International Journal of Ad Hoc and Ubiquitous Computing on Multimedia and Networking (IAHUC) 2009, 2010
- International Journal of Intelligent Engineering & Systems 2009
- ACM Transactions on Autonomous Adaptive Systems (ACM TAAS) 2008
- Journal of Computer Science and Technology (JCST) 2008, 2010
- Journal of Parallel and Distributed Computing (JPDC) 2007, 2010, 2011
- Journal of Computers and Applications 2007