

# WEISONG SHI

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## RESEARCH INTERESTS

Edge Computing, Computing Systems for Autonomous Driving, Connected Health

## LEADERSHIP

Associate Dean for Research and Graduate Studies, College of Engineering  
Chair, Wayne Mobility Initiative (<http://mobility.wayne.edu/>)  
Director, Connected and Autonomous Driving Laboratory (The CAR Lab) (<http://thecarlab.org/>)  
Director, Mobile and Internet Systems Laboratory (<http://mist.cs.wayne.edu>)  
Director, Cyber-Physical Systems Program (<http://engineering.wayne.edu/cyber/>)

## EDUCATION

Ph.D., Computer Engineering Sep '95 – Mar '00  
Institute of Computing Technology, Chinese Academy of Sciences, Beijing, China  
Adviser: Professor Peisu Xia

B.E., Computer Science Sep '91 – Jul '95  
Xidian University, Xi'an, China

## EMPLOYMENT

*Associate Dean for Research and Graduate Studies* May '20 – present  
College of Engineering  
Wayne State University

*Professor* Aug '13 – present  
Department of Computer Science  
Wayne State University

*Associate Dean for Research* Aug '19 – May '20  
College of Engineering  
Wayne State University

*Program Director* Aug '13 – Aug '15  
CISE/CNS/CSR  
National Science Foundation

*Associate Professor* Aug '08 – Aug '13  
Department of Computer Science  
Wayne State University

*Assistant Professor* Aug '02 – Aug '08  
Department of Computer Science

Wayne State University

*Associate Research Scientist in Computer Science*  
Courant Institute of Mathematical Sciences  
New York University

Apr '00 – Aug '02

## ACADEMIC HONORS AND AWARDS

- Outstanding Scientific Article Award by CAST, 2020
- IEEE TCI Distinguished Service Award, 2020
- Most Downloaded Paper Award (IEEE Computer), 2018
- Best Paper Award of IEEE eHealth Technical Committee 2017
- Academia Advisory Board of IEEE Computer Society 2017
- Associate Editor-In-Chief of IEEE Internet Computing 2017
- ACM Distinguished Scientist 2016
- Appointed as the Inaugural Editor-In-Chief of **Smart Health Journal** 2016
- College of Engineering Faculty Research Excellence Award 2016
- **IEEE Fellow (Computer Society)** 2016
- IEEE HealthCom Best Student Paper Award 2015
- Wayne State University Charles H. Gershenson Distinguished Faculty Fellow 2015
- Best Paper Nominee of 2014 ACM International Joint Conference on Pervasive and Ubiquitous Computing (Ubi-Comp), September 2014
- Spotlight paper of IEEE Transactions on Parallel and Distributed Systems, April 2013
- Best Paper Award of IEEE International Symposium on Workload Characterization 2012
- Best Paper Award of National Annual Conference on High Performance Computing 2012
- Chair of the IEEE Computer Society Technical Committee on the Internet (2012 - )
- College of Liberal Arts and Sciences Teaching Award 2011
- Wayne State University Career Development Chair Award 2009
- **NSF CAREER Award** 2007
- College of Liberal Arts and Sciences Teaching Award 2007
- Marquis Who's Who of Emerging Leaders 2006
- Wayne State University Faculty Research Award, 2005
- Best Paper Award in IEEE 19th International Parallel and Distributed Processing Symposium, April 2005
- Best Paper Award in 4th International Conference on Web Engineering, July 2004
- Wayne State University Faculty Research Award, 2004
- **100 National Outstanding Dissertations of China**, 2002

- President Outstanding Honor of Chinese Academy of Sciences, 2000
- Microsoft Research Fellowship, 1999

## GRANTS AND CONTRACTS

### External Grants and Contracts

Total: \$18M

1. NSF, Center for Broad Explorations on Spectrum Technologies for Navigation, Environment, Surveillance, and Transportation (BEST NEST) planning, \$300,000, 10/1/20-3/31/21, Co-PI, (PI, Seyed Zekavat, WPI)
2. NSF, RAPID: CORPUS: An Edge Intelligence-Assisted Multi-Granularity COVID-19 Risk Predication and Update System, \$150,000, 7/1/20-6/30/21. PI (Co-PI: Ming Dong)
3. MDOT Mobility Challenge for NAAIAS 2020, \$15,000, 5/1/20-6/30/20. (PI)
4. USDOT Autonomous Driving Systems (ADS) Demonstration Grant in City of Detroit, \$7,500,000, 1/1/20-12/31/23. (Senior personnel).
5. NSF, SaTC: CORE: Small: Collaborative: Hardware-assisted Plausibly Deniable System for Mobile Devices, \$250,000, 10/1/19-9/30/22. PI (Original PI was Fengwei Zhang)
6. Great Lake Protection Fund (GLPF), Smart Management of Microplastic Pollution in the Great Lakes, \$929,000, 11/1/18-10/31/21, Co-PI. (PI: Yongli Zhang)
7. NSF, CSR PI meeting, \$160k, 8/1/18-7/31/19. PI.
8. Michigan Health Endowment Fund, Real Time Nursing Home Quality Control, MHEF R-1712-142406, \$79,846, 5/1/18-4/30/19, Co-PI. (PI Allen Goodman).
9. Facebook Research Award, \$50k, 2018. (PI)
10. Microsoft Azure Research Award, \$10K, 2/1/18-1/31/19, MPI (with Yongli Zhang).
11. NSF, S&AS:INT: Autonomous Battery Operating System (ABOS): An Adaptive & Comprehensive Approach to Efficient, Safe, & Secure Battery System Management, \$1.25M, 9/1/17-8/31/21, Co-PI (PI: Nathan Fisher).
12. NSF, OpenEdge: Toward Open and Transparent Edge Computing and Its Application in Public Safety, \$50K, 9/1/17-8/31/18. PI.
13. Michigan Health Endowment Fund, Real Time Nursing Home Quality Control, MHEF R-1608-140360, \$97,534, 5/1/17-4/30/18, Co-PI. (PI Allen Goodman).
14. NSF, CNS workshop on Grand Challenges on Computing at the Edge, 8/1/16-7/31/18, \$100,000. (Sole PI)
15. NSF, CCF Medium:Collaborative Research: Wizard: Exploiting Disk Performance Signatures for Cost-Effective Management of Large-Scale Storage Systems, 6/1/16-5/31/19, total budget \$700,000. (Sole PI)
16. NSF, EAGER: Fine-Grained Software Power Prediction and Its Application on Power Management of Heterogeneous Multicore Systems, 2/1/16-1/31/18, \$299,928. (Sole PI)
17. Intel, Internet of Things Innovators Lab, October 2015, \$30,000 + Equipment. (Sole PI)
18. Great Lakes Protection Fund (GLPF), Real-Time Energy Impact Monitors for Residential, Industrial and Policy Use, 7/1/13-6/30/15, \$557,000. (Co-PI, PI: Carol Miller).
19. Gates Foundation (Grand Challenge Exploration Program), Mobile Immunization Tracking and Management System, 11/1/12-4/30/14, \$100K (Direct Cost). (Co-PI, PI: Paul Kilgore)
20. NSF II-NEW: A Research and Education Infrastructure for Power- and Thermal-Aware Computing , \$386,396, 6/1/12-5/31/15. (PI, Co-PI: Nathan Fisher)

21. VA: iOS application for Veteran Health Goal Tracking Patient Centered Care, 10/1/11-8/31/12, \$200,000 (Co-PI, PI: Kai Yang)
22. Department of Homeland Security, "First Responder Resiliency-Identification and Application of Malleable Factors," (Co-PI, PI: Bengt Arnetz), October 2010 - September 2012. \$437,560. (stopped because of federal cut)
23. Air Force SBIR, "Building a Trust-aware Dynamic Routing Solution for Wireless Sensor Networks," (PI, lead organization: Intelligent Automation Inc.), December 2009 - December 2011, \$750,000 (Wayne State University, \$150,000).
24. Swedish Council for Working Life and Social Research, "Real-time Psychosocial Assessment and Cardiovascular Reactions: Application of an Interactive Wireless Data Collection System," (Co-PI, PI: Bengt Arnetz), June 2009 - June 2012, 2,100,000 SEK (Wayne State University, 324,000 SEK).
25. NSF, "NOSS: Consistency Model Driven Deceptive Data Detection and Filtering in Wireless Sensor Networks," (Sole PI), August 2007 - May 2011. \$200,002.
26. NSF, "**CAREER**: Mechanisms for Resource Sharing in Collaborative High-End Computing Platforms," (PI), April 2007 - April 2012. \$465,770 + \$121,002 (university match).
27. Chrysler/Bright Star Engineering, "Mobile Sensor Networks for Automotive Diagnostics," (Sole PI), July 2008 - July 2010, \$41,000.
28. AtomyNet, "Performance Evaluation of Symmetric and Asymmetric Encryption Algorithms and Exploiting New Potential Applications in Embedded Systems," (Sole PI), October 2005 - September 2006. \$58,548
29. Michigan Life Sciences Corridor, "Integration of Bioengineering and Biocomputing to Advance Michigan Computer-Assisted Surgery" August 2003 - July 2007. (PI- Vipin Chaudhary and 7 other Co-PIs, 10% + one 12 month GRA). \$3,377,560.

### Internal Grants

1. Wayne State University, Data Science Initiative, 11/1/16-10/31/19, \$500K.
2. Wayne State University Technology Development Incubator, "MyPalm Vein 2.0 System," January 2016 - January 2018, \$25,000. (with Paul Kilgore).
3. Wayne State University: "StressBar: A System for Stress Information Collection and Personalized Recommendation," August 2012-August 2013, one 12-month GRA.
4. Wayne State University: "REP: Innovative Data Management for Massive Genomics Data Sets," \$99,957, 07/01/11-12/31/12. (PI, Co-PIs: Douglas Ruden and five others)
5. Wayne State University: OVPR support for Wireless Health Initiative, \$10,000, 11/01/11-10/31/12. (PI)
6. Wayne State University, "Cross-disciplinary GRA Assistantship in Computer Science and Bioinformatics for Next Generation Genome Analyses," August 2010 - August 2011, one 12-month GRA.
7. Wayne State University, "CodeGreen: An Energy-aware Operating System for Green Computing," \$19,500, May 2009-May 2010.
8. Wayne State University, "In-Situ Psychosocial Stress Information Collection Using Body Area Wireless Sensor Networks," ( Co-PIs: Bengt Arnetz, Mark Lumley), August 2007 - August 2008. \$33,187.
9. Wayne State University, "Innovative Measurement of Motion and Falling Detection of Aging Citizens Using Wireless Sensor Networks," (Co-PIs: Peter Litcherberg, Thomas Jankowski), August 2006 - August 2007. \$33,187.
10. Wayne State University, "Spirit: System Support for Applying Wireless Sensor Networks in Geo-Environmental Monitoring Applications," (PI), May 2005 - April 2006. \$9,982.

11. Wayne State University, “A Highly Accurate Landmark Free Topology Mapping Algorithm for Wireless Sensor Networks in Environmental Engineering Applications,” (Co-PI: Carol Miller), August 2004 - August 2005. \$66,374.
12. Wayne State University, “Scalable Delivery and Nomadic Access of Dynamic Web Content,”(PI), May 2004 - April 2005. \$6,952.

## **PATENTS**

1. US Provisional Patent App No. 62/241,500 for: MYPALM VEIN: A PALM VEIN-BASED LOW-COST MOBILE IDENTIFICATION SYSTEM FOR WIDE AGE RANGE, Nov. 2015.
2. US Provisional Patent App No. 62/237,191 for: FINE-GRAINED DISK FAILURE PREDICTION IN DATA CENTERS, Oct 2015.

## **OPEN SOURCE SOFTWARE**

1. OpenVDAP: Open Vehicular Data Analytics Platform
2. HydraOne: An Indoor Research and Education Platform for CAVs
3. HERO: An Mobile App for Home Emission Read-Out
4. pTop: A process-level power profiling tool
5. Bugu: An application-level power profiler and analyzer for mobile devices
6. CloudAligner: A cloud-based sequence analysis tool
7. SPAN: A software power analyzer
8. RatSim: A Simulator of Rating Algorithms for Reputation Systems
9. SCore: A Cross-layer Sensor Core Library (for TinyOS)

## **PUBLICATIONS**

### **Books and Reports (5)**

1. Jie Cao, Quan Zhang, and Weisong Shi, *Edge Computing: A Primer*, Springer, December 2018.
2. Weisong Shi, Fang Liu, Hui Sun, and Qingqi Pei, *Edge Computing*, Science Press, January 2018.
3. Mung Chiang and Weisong Shi (Editors) *NSF Workshop Report on Grand Challenges in Edge Computing*, October 26, 2016. Washington DC.
4. Weisong Shi, *Foundations of Computer Systems Research*, Higher Education Press, 286 pages, October 2010. (Edited)
5. Weisong Shi, *Performance Optimization of Software Distributed Shared Memory Systems*, Higher Education Press, 251 pages, July 2004.

### **Journal Papers and Magazine Articles (97)**

1. Blesson Varghese, Nan Wang, David Bernbach, Cheol-Ho Hong, Eyal de Lara, Weisong Shi, Christopher Stewart, “A Survey on Edge Performance Benchmarking,” accepted by ACM Computing Surveys, December 2020.
2. Liangkai Liu, Sidi Lu, Ren Zhong, Baofu Wu, Yongtao Yao, Qingyang Zhang, Weisong Shi, “Computing Systems for Autonomous Driving: State-of-the-Art and Challenges,” accepted by IEEE Internet of Things Journal, November 2020.
3. Congfeng Jiang, Yitao Qiu, Weisong Shi, Zhefeng Ge, Jiwei Wang, Shenglei Chen, Christophe Cerin, Zujie Ren, Guoyao Xu and Jiangbin Lin, “Characterizing Co-located Workloads in Alibaba Cloud Datacenters,” accepted by IEEE Transactions on Cloud Computing. October 2020.
4. Sidi Lu, Yongtao Yao and Weisong Shi, “CLONE: Collaborative Learning on the Edges,” IEEE Internet of Things Journal, accepted, October 2020.

5. Yanming Chen, Chao Li, Luqi Gong, Xiang Wen, Yiwen Zhang, Weisong Shi, "A Deep Neural Network Compression Algorithm based on Knowledge Transfer for Edge Devices," accepted by Elsevier Computer Communications, September 2020.
6. Qingyang Zhang, Hong Zhong, Jie Cui, Lingmei Ren and Weisong Shi, "AC4AV: A Flexible and Dynamic Access Control Framework for Connected and Autonomous Vehicles," IEEE Internet of Things Journal, Vol. 8, No. 3, Feb. 2021, pp.1946-1958.
7. Qu Yuan Luo, Changle Li, Tom Luan, Weisong Shi, "Collaborative Data Scheduling for Vehicular Edge Computing via Deep Reinforcement Learning," IEEE Internet of Things Journal, Vol. 7, No. 10, October. 2020. pp.9637-9650.
8. Kaile Xiao, Weisong Shi, Zhipeng Gao, Congcong Yao, Xuesong Qiu, "DAER: A Resource Pre-allocation Algorithm of Edge Computing Server using Blockchain in Intelligent Driving," IEEE Internet of Things Journal, Vol. 7, No. 10, October 2020. pp. 9291-9302.
9. Qu Yuan Luo, Changle Li, Tom Luan, Weisong Shi, "EdgeVCD: Intelligent Algorithm Inspired Content Distribution in Vehicular Edge Computing Network," IEEE Internet of Things Journal, Vol. 7, No. 6, June 2020. pp.5562-5579.
10. Jie Tang, Shaoshan Liu, Liangkai Liu, Bo Yu, and Weisong Shi, "LoPECS: A Low-Power Edge Computing System for Real-Time Autonomous Driving Services," IEEE Access, Vol. 8, pp. 30467-30479, Feb. 2020.
11. Kaile Xiao, Zhipeng Gao, Weisong Shi, Xuesong Qiu, Yang Yang, Lanlan Rui, "EdgeABC: An Architecture for Task Offloading and Resource Allocation in the Internet of Things," accepted by Future Generation Computer Systems, February 2020.
12. Hui Sun, Weisong Shi, Xu Liang and Ying Yu, "VU: Edge Computing-Enabled Video Usefulness Detection and Its Application in Large-Scale Video Surveillance Systems," IEEE Internet of Things Journal, Vol. 7, No. 2, pp. 800-817, February 2020.
13. Congfeng Jiang, Tiantian Fan, Honghao Gao, Weisong Shi, Liangkai Liu, Christophe Cerin, Jian Wan, "Energy-Aware Edge Computing: A Survey," Computer Communications, Vol. 151, No. 1, February 2020. pp. 556-580.
14. Sa Wang, Yan-Hai Zhu, Shan-Pei Chen, Tian-Ze Wu, Wen-Jie Li, Xu-Sheng Zhu, Hai-Yang Ding, Wei-Song Shi, Yun-Gang Bao, "A Case for Adaptive Resource Management in Alibaba Datacenter Using Neural Networks," Journal of Computer Science and Technology, Vol. 35, No.1, Jan. 2020. pp. 209-220.
15. Jie Tang, Shaoshan Liu, Jie Cao, Dawei Sun, Bollin Ding, Jean-Luc Gaudiot, Weisong Shi, " $\pi$ -Hub: Large-Scale Video Learning, Storage, and Retrieval on Heterogeneous Hardware Platforms," Future Generation Computer Systems, Vol. 102, January 2020, pp. 514-523.
16. Weisong Shi, George Pallis and Zhiwei Xu, "Edge Computing," Proceedings of the IEEE, Vol. 107, No. 8, August, 2019. pp. 1474-1481.
17. Shaoshan Liu, Liangkai Liu, Jie Tang, Bo Yu, Yifan Wang, and Weisong Shi, "Edge Computing for Autonomous Driving: Opportunities and Challenges," Proceedings of the IEEE, Vol. 107, No. 8, August, 2019. pp. 1697-1716. .
18. Zhenyu Ning, Fengwei Zhang, Weisong Shi, "A Study of Using TEE on Edge Computing," Journal of Computer Research and Development, Vol. 56, No. 7, pp. 1441-1453. July 2019.
19. Yao Zhang, Changle Li, Tom H. Luan, Yuchuan Fu, Weisong Shi, and Lina Zhu, "A Mobility-Aware Vehicular Caching Scheme in Content Centric Networks: Model and Optimization," IEEE Transactions on Vehicular Technology, Vol. 68, No. 4, pp. 3100-3112, April 2019.
20. Hui Sun, Wei Liu, Jianzhong Huang and Weisong Shi, "Collaborative Compaction Optimization System using Near-Data Processing for LSM-tree-based Key-Value Stores," Journal of Parallel and Distributed Computing (JPDC), May, 2019.
21. Congfeng Jiang, Guangjie Han, Jiangbin Lin, Gangyong Jia, Weisong Shi and Jian Wan, "Characteristics of Co-allocated Online Services and Batch Jobs in Internet Data Centers: A Case Study from Alibaba Cloud," IEEE Access, January 2019.
22. Weisong Shi, Xingzhou Zhang, Yifan Wang and Qingyang Zhang, "Edge Computing: State-of-the-Art and Future Directions," Journal of Computer Research and Development, Vol. 56, No. 1, January 2019.
23. Lingmei Ren, Qingyang Zhang, Weisong Shi, and Yanjun Peng, "Edge-based Personal Computing Services: Fall Detection as a Pilot Study," accepted by Springer Computing, 2019.
24. Hui Sun, Guodong Chen, Jianzhong Huang, Xiao Qin, Weisong Shi, "CalmWPC: A Buffer Management to Calm Down Write Performance Cliff for NAND Flash-based Storage Systems," Future Generation Computer Systems, 2019, 90, 461-476.
25. Qingyang Zhang, Quan Zhang, Weisong Shi and Hong Zhong, "Distributed Collaborative Execution on the Edges and Its Application on AMBER Alert," IEEE Internet of Things Journal, Vol. 5, No. 5, October 2018.
26. Hui Sun, Wei Liu, Zhi Qiao, Song Fu and Weisong Shi, "DStore: A Holistic Key-Value Store Exploring Near-Data Processing and On-Demand Scheduling for Compaction Optimization," in IEEE Access, Vol. 6, pp. 61233-61253, 2018.
27. Quan Zhang, Qingyang Zhang, Weisong Shi and Hong Zhong, "Firework: Data Processing and Sharing for Hybrid Cloud-Edge Analytics," IEEE Transactions on Parallel and Distributed Systems, Vol. 29, No. 9, September 2018. pp. 2004-2017.

28. Kewei Sha, Wei Wei, Andrew T. Yang, Zhiwei Wang and Weisong Shi, "On Security Challenges and Open Issue in Internet of Things," *Future Generation Computer Systems*, Vol. 83, June 2018. pp. 326-337.
29. Youhuizi Li, Mohit Kumar and Weisong Shi, "Falcon: An Ambient Temperature Aware Thermal Control Policy for IoT Gateways," *Sustainable Computing: Informatics and Systems*, Vol. 16, December 2017, pp. 48-55.
30. Zujie Ren, Weisong Shi, Jian Wan, Feng Cao and Jiangbin Lin, "Realistic and Scalable Benchmarking Cloud File Systems: Practices and Lessons from AliCloud," *IEEE Transactions on Parallel and Distributed Systems (TPDS)*, Vol. 28, No. 11, November 2017, pp.3272-3285.
31. Congfeng Jiang, Dongyang Ou, Yumei Wang, Xindong You, Jilin Zhang, Jian Wan, Bing Luo and Weisong Shi, "Energy Efficiency Comparison of Hypervisors," accepted by *Sustainable Computing: Informatics and Systems*, October 2017.
32. Yan Hu, Weisong Shi and Xiaohui Hu, "Mitigating Data Sparsity Using Similarity Reinforcement Enhanced Collaborating Filtering," *ACM Transactions on Internet Technology (TOIT)*, Vol. 17, No. 3, July 2017.
33. Weisong Shi, Hui Sun, Jie Cao, Quan Zhang and Wei Liu, "Edge Computing — An Emerging Computing Model for the Internet of Everything Era," *Journal of Computer Research and Development*, Vol. 54, No. 5, pp. 907-924, May 2017. (in Chinese)
34. Weisong Shi, Jie Cao, Quan Zhang, Youhuizi Li and Lanyu Xu, "Edge Computing: Vision and Challenges," *IEEE Internet of Things Journal*, Vol. 3, No. 5, October 2016, pp. 637-646.
35. Weisong Shi and Schahram Dustdar, "The Promise of Edge Computing," *IEEE Computer Magazine*, Vol. 29, No. 5, pp. 78-81. May 2016.
36. Bing Luo, Shinan Wang, Weisong Shi and Yanfei He, "eCope: Workload-aware Elastic Customization for Power Efficiency of High-End Servers," *IEEE Transactions on Cloud Computing*, Vol. 4, No. 2, April-June 2016.
37. Quan Zhang and Weisong Shi, "Energy-Efficient Workload Placement in Enterprise Datacenters," *IEEE Computer*, Vol. 29, No. 2, pp. 46-52, 2016.
38. Shinan Wang, Bing Luo, Weisong Shi and Devesh Tiwari, "Application Configuration Selection for Energy-Efficient Execution on Multicore Systems," *Journal of Parallel and Distributed Computing*, Vol. 87, January 2016, pp. 43-54.
39. Michelle Rogers, Guoyao Xu, Shawn McElmurry, Weisong Shi, Caisheng Wang, Stephen Miller, Yang Wang and Cheng-Zhong Xu, "HERO: A Smart-Phone Application for Location Based Emissions Estimates," *Sustainable Computing: Informatics and Systems*, Vol. 8, pp. 3-7, December 2015.
40. Lena Mashayekhy, Mahyar Movahed Nejad, Daniel Grosu, Quan Zhang and Weisong Shi, "Energy-aware Scheduling of MapReduce Jobs for Big Data Applications," *IEEE Transactions on Parallel and Distributed Systems*, Vol. 26, No. 10, October 2015.
41. Lingmei Ren and Weisong Shi, "Chameleon: Personalized and Adaptive Fall Detection of Elderly People in Home-based Environments," accepted by *International Journal of Sensor Networks (IISNet)*, January 2015.
42. Quan Zhang, Grace Metri, Sudharsan Raghavan and Weisong Shi, "RESCUE: An Energy-Aware Scheduler for Cloud Environments," *Sustainable Computing: Informatics and Systems special issue on Energy-Aware Resource Management and Scheduling (EARMS)*, Volume 4, Issue 4, December 2014, Pages 215 - 224.
43. Pradeep M. Hettiarachchi, Nathan Fisher, Masud Ahmed, Le Yi Wang, Shinan Wang and Weisong Shi, "The Design and Analysis of Thermal-Resilient Hard-Real-Time Systems," *ACM Transactions on Embedded Computing Systems*, Volume 13, Issue 5s, November 2014 Article No. 146.
44. Yong Xi, Loren Schwiebert and Weisong Shi, "Privacy Preserving Shortest Path Routing with an Application to Navigation," *Pervasive and Mobile Computing*, Vol. 13, August 2014. pp. 142-149.
45. Youhuizi Li, Hui Chen and Weisong Shi, "Power Behavior Analysis of Mobile Applications using Bugu," *Sustainable Computing: Informatics and Systems*, Volume 4, Issue 3, September 2014, Pages 183-195.
46. Mark A. Lumley, Weisong Shi, Clairiy Wiholm, Richard B. Slatcher, Helene Sandmark, Shinan Wang, Anders Hytter and Bengt B. Arnetz "The Relationship of Chronic and Momentary Work Stress to Cardiac Reactivity in Women Managers: Feasibility of a Smart Phone-Assisted Assessment System," *Psychosomatic Medicine: Journal of Biobehavioral Medicine*, 76:512-518, 2014.
47. Zujie Ren, Jian Wan, Weisong Shi, Xianghua Xu and Min Zhou, "Workload Analysis, Implications and Optimization on a Production Hadoop Cluster: A Case Study on Taobao," *IEEE Transactions on Services Computing*, Vol. 7, No. 2, April-June 2014. pp.307-321.
48. Tung Nguyen and Weisong Shi, "MapReduce in the Cloud: Data Location-Aware Virtual Machine Scheduling," *ZTE Communications*, Vol. 5, No. 4, December 2013.
49. Jianfeng Zhan, Lei Wang, Xiaona Li, Weisong Shi, Chuliang Weng and Wenyaoy Zhang, "Cost-aware Cooperative Resource Provisioning for Heterogeneous Workloads in Data Centers," *IEEE Transactions on Computers*, Vol. 62, No. 11, November 2013. pp. 2155-2168.

50. Tung Nguyen, Jingwen Zhang and Weisong Shi, SPBD: Streamlining Big Data Processing in Cloud Environments, ZTE Communications, Vol. 5, No. 2 June 2013.
51. Sheng Gao, Jianfeng Mao, Weisong Shi, Guoxing Zhan and Cong Sun, "TrPF:A Trajectory Privacy-Preserving Framework for Participatory Sensing," IEEE Transactions on Information Forensics and Security, Vol. 8, No. 6, June 2013. pp.874-887.
52. Lingjun Fan, Yuanchao Xu, Weisong Shi, Dongrui Fan and Jie Lou, "Hybrid Approach of Filtering Unnecessary Way Accesses for Set-Associate Caches," Chinese Journal of Computers, Vol. 36, No. 4, April 2013.
53. Sheng Gao, Jianfeng Ma, Weisong Shi and Guoxing Zhan, "LTPPM: Location and Trajectory Privacy Protection Mechanism in Participatory Sensing," accepted by Wireless Communication and Mobile Computing. Oct 2012.
54. Quan Zhang, Lingmei Ren and Weisong Shi, "HONEY: A Multimodality Fall Detection and Telecare System," Telemedicine and e-Health, Vol. 19, No. 5, May 2013, pp. 415-29.
55. Guoxing Zhan and Weisong Shi, "LOBOT: Low-Cost, Self-Contained Localization of Small-Sized Ground Robotic Vehicles," IEEE Transactions on Parallel and Distributed Systems, Vol. 24, No. 4, April 2013. (**Spotlight paper of April 2013**).
56. Ying Song, Yuzhong Song and Weisong Shi, "A Two-Tiered On-Demand Resource Allocation Mechanism for VM-Based Data Centers," IEEE Transactions on Services Computing, Vol. 6, No. 1, January 2013, pp. 116-129.
57. Tung Nguyen and Weisong Shi, "Improving Resource Efficiency in Data Centers using Reputation-based Resource Selection," Sustainable Computing: Informatics and Systems, Vol. 2, No. 3, September 2012. pp. 138-150.
58. Hui Chen, Youhuizi Li and Weisong Shi, "Fine-Grained Power Management Using Process-level Profiling," Sustainable Computing: Informatics and Systems, Vol. 2, No.1, March 2012. pp.33-42.
59. Huajian Mao, Nong Xiao, Weisong Shi and Yutong Lu, "Wukong: A Cloud-Oriented File Service for Mobile Internet Devices," Journal of Parallel and Distributed Computing, Vol. 72, No. 2, February 2012. pp. 171-184.
60. Tiewing Zhang, Xueqi Cheng, Jianming Lv, Zhenghua Li and Weisong Shi, "Providing Hierarchical Lookup Service for P2P-VoD Systems," ACM Transactions on Multimedia Computing, Communications and Applications, Vol. 8, No.1, February 2012.
61. Guoxing Zhan, Weisong Shi and Julia Deng, "Design, Implementation and Evaluation of TARP: A Trust-Aware Routing Framework for Dynamic WSNs," IEEE Transactions on Dependable and Secure Computing, Vol. 9, No.2, March/April 2012. Pp. 184-197.
62. Lei Wang, Jianfeng Zhan, Weisong Shi and Yi Liang, "In Cloud, Can Scientific Communities Benefit from the Economies of Scale?" IEEE Transactions on Parallel and Distributed Systems, Vol. 23, No. 2, Feb. 2012, pp. 296-303.
63. Guoxing Zhan, Weisong Shi and Julia Deng, SensorTrust: "A Resilient Trust Model for Wireless Sensing Systems," Elsevier Pervasive and Mobile Computing, Vol. 7, No. 4, August 2011, pp. 509-522.
64. Xu Liu, Jianfeng Zhan, Kunlin Zhan, Weisong Shi, Lin Yuan, Dan Meng and Lei Wang, "Automatic Performance Debugging of SPMD-style Parallel Programs," Journal of Parallel and Distributed Computing, Vol. 71, No. 7, July 2011.
65. Tung Nguyen, Weisong Shi and Douglas Ruden, "CloudAligner: A Fast and Full-Featured MapReduce based Tool for Sequence Mapping," BMC Research Notes, 4:171 June 2011.
66. Shinan Wang, Hui Chen and Weisong Shi, "SPAN: A Software Power Analyzer for Multicore Computer Systems," Elsevier Sustainable Computing: Informatics and Systems, Vol. 1, No.1, pp. 23-34, January 2011.
67. Zhifeng Yu, Chenjia Wang and Weisong Shi, "Failure-aware Workflow Scheduling in Cluster Environments," Springer Cluster Computing Journal, Volume 13, No. 4, 2010, pp. 421-434.
68. Zhifeng Yu and Weisong Shi, "Queue Waiting Time Aware Dynamic Workflow Scheduling in Multiclustere Environments," Journal of Computer Science and Technology, Vol. 25, No. 4, July 2010, March 2010.
69. Kewei Sha, Shinan Wang and Weisong Shi, " $RD^4$ : Role-Differentiated Cooperative Deceptive Data Detection and Filtering in VANETs," IEEE Transactions on Vehicular Technology, Vol. 59, No. 3, pp. 1183-1190, March 2010.
70. Zhengqiang Liang and Weisong Shi, "A Reputation-driven Scheduler for Autonomic and Sustainable Resource Sharing in Grid Computing," Journal of Parallel and Distributed Computing, Vol. 70, No. 2, pp. 111-125, February 2010.
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1. Sidi Lu, Xin Yuan and Weisong, "An Integrated Framework for Compressive Imaging Processing on CAVs" in Proceedings of the Fifth ACM/IEEE Symposium on Edge Computing (SEC), November 11-13, 2020.
2. Lanyu Xu, Arun Iyengar and Weisong, "CHA: A Caching Framework for Home-based Voice Assistant Systems," in Proceedings of the Fifth ACM/IEEE Symposium on Edge Computing (SEC), November 11-13, 2020.
3. Samira Taghavi and Weisong Shi, "EdgeMask: An Edge-based Privacy Preserving Service for Video Data Sharing," in Proceedings of the 3rd Workshop on Security and Privacy in Edge Computing (EdgeSP), Nov. 13, 2020.
4. Bodong Shang, Shiyun Liu, Sidi Lu, Yang Yi, Weisong Shi, and Lingjia Liu, "A Cross-Layer Optimization Framework for Distributed Computing in IoT Networks," in Proceedings of the 1st Workshop on Edge Computing and Communications (EdgeComm), Nov. 13, 2020.
5. Liangkai Liu, Baofu Wu, Weisong Shi, "A Comparison of Communication Mechanisms in Vehicular Edge Computing," in Proceedings of the 3rd USENIX Hot Topics in Edge Computing (HotEdge), July 14, 2020.
6. Mohit Kumar, Liangkai Liu, Xingzhou Zhang, Yifan Wang, Weisong Shi, "Energy-Efficient Machine Learning on the Edges," in Proceedings of the 2nd workshop on Parallel AI and Systems for the Edge (PAISE), May 22, 2020.
7. Zheng Dong, Weisong Shi, Guangmo Tong, Kecheng Yang, "Collaborative Autonomous Driving: Vision and Challenges," in Proceedings of the third IEEE International Conference on Connected and Autonomous Driving, Feb. 27-28, 2020, Detroit, MI, USA.
8. Tianze Wu, Yifan Wang, Weisong Shi, Joshua Lu, "HydraMini: An FPGA-based Affordable Research and Education Platform for Autonomous Driving," in Proceedings of the third IEEE International Conference on Connected and Autonomous Driving, Feb. 27-28, 2020, Detroit, MI, USA.
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91. Feng Chen, Song Jiang, Weisong Shi, and Weikuan Yu, "FlexFetch: A History-Aware Scheme for I/O Energy Saving in Mobile Computing," in Proceedings of ICPP 2007, September 10-14, 2007. Xi'an, China.
92. Safwan Al-Omari and Weisong Shi, "Towards Highly-Available WSNs for Assisted Living," in Proceedings of HealthNet 2007, in conjunction with USENIX/ACM MobiSys 2007, June 11-14, San Juan. (Accept rate: 24%, 12 out of 50).
93. 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.
94. Zhifeng Yu and Weisong Shi, "An Adaptive Rescheduling Strategy for Grid Workflow Applications," in Proceedings of the 21st IPDPS 2007, Long Beach, Mar 26 -30, 2007. (Accept rate: 26%)
95. 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 21-23, 2007.
96. Junzhao Du and Weisong Shi, "An Application-aware Event-Oriented MAC Protocol in Multimodality Wireless Sensor Networks," in Proceedings of the 2nd International Conference on Mobile Ad-hoc and Sensor Networks (MSN 2006), December 13-15, 2006. Hong Kong. (Accept rate: 30%)
97. Safwan Al-Omari and Weisong Shi, "Redundancy Aware Topology Management in Wireless Sensor Networks," in Proceedings of the 2nd IEEE CollaborateCom, Atlanta, November 17-20, 2006.
98. Kewei Sha, Yong Xi, Weisong Shi, Loren Schwiebert, and Tao Zhang, "Adaptive Privacy-Preserving Authentication in Vehicular Networks," in Proceedings of IEEE International Workshop on Vehicle Communication and Applications, Beijing, Oct 27, 2006.
99. Zhengqiang Liang and Weisong Shi, "TRECON: A Framework for Enforcing Trusted ISP Peering," in Proceedings of the 15th IEEE International Conference on Computer Communications and Networks (ICCCN '06), Arlington, Oct 9-11, 2006.
100. Hui Liu, Hanping Lufei, Weisong Shi, and Vipin Chaudhary, "Towards Ubiquitous Access of Computer-Assisted Surgery Systems," in Proceedings of the 28th Annual International Conference IEEE Engineering in Medicine and Biology Society, New York, August 30 — September 3, 2006.
101. Safwan Al-Omari, Junzhao Du, and Weisong Shi, "Score: A Sensor Core Framework for Cross-Layer Design (extended abstract)," in Proceedings of the 3rd International Conference on Quality-of-Service in Wired/Wireless Networks (QShine 2006), Waterloo, Canada, August 7-9, 2006.
102. Hanping Lufei and Weisong Shi, "e-QoS: Energy-aware QoS for Application Sessions Across Multiple Protocol Domains in Mobile Computing," in Proceedings of the 3rd International Conference on Quality-of-Service in Wired/Wireless Networks (QShine 2006), Waterloo, Canada, August 7-9, 2006.
103. Kewei Sha and Weisong Shi, "On the Effects of Consistency in Data Operations in Wireless Sensor Networks," in IEEE 12th International Conference on Parallel and Distributed Systems (ICPADS '2006), Minneapolis, USA, July 12-15, 2006.
104. Hanping Lufei, Weisong Shi, and Vipin Chaudhary, "M-CASEngine: A Collaborative Environment for Computer Assisted Surgery," in *Proceedings of 2006 Computer Assisted Radiology and Surgery 20th International Congress and Exhibition*, Osaka, Japan, July 2006.

105. Kewei Sha, Weisong Shi, and Orlando Watkins, "Using Wireless Sensor Networks for Fire Rescue Applications: Requirements and Challenges," in *Proceedings of the IEEE EIT 2006*, East Lansing, May 7-10, 2006.
106. Yong Xi, Loren Schwiebert, and Weisong Shi, "Preserving Privacy in Monitoring-based Wireless Sensor Networks," in *Proceedings of the 2nd IEEE International Workshop on Security in Systems and Networks (SSN '06)*, Rhode Island, Greece, April 25-29 2006.
107. Zhengqiang Liang and Weisong Shi, "Performance Evaluation of Different Recommendations Aggregation Schemes in Reputation Systems," in *Proceedings of the first IEEE International Conference on Collaborative Computing: Networking, Applications, and Worksharing (CollaborateCom '05)*, San Jose, December 19-21, 2005
108. 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)*, Nagasaki, Japan, December 6-9, 2005.
109. Sharun Santhosh and Weisong Shi, "A Semantic-based Cache Replacement Algorithm for Mobile File Access," in *Proceedings of the MobEA-III — Customer focused mobile services*, in conjunction with WWW 2005, May 10, 2005.
110. Hanping Lufei and Weisong Shi, "Fractal: A Mobile Code Based Framework for Dynamic Application Protocol Adaptation in Pervasive Computing," in *Proceedings of 19th IEEE International Parallel and Distributed Processing Symposium*, Denver, CO, April 2005. (**The Best Paper Award**).
111. Carol J. Miller, Weisong Shi, Safwan Al-Omari, and Mike. Firestone, "Wireless Sensor Networks for Containment System Monitoring," Poster Presentation at Engineering Society of Detroit Waste Management Conference, March, 2005.
112. Zhengqiang Liang and Weisong Shi, "PET: A Personalized Trust Model with Reputation and Risk Evaluation for P2P Resource Sharing," in *Proceedings of 38th Hawaii International Conference on System Science (HICSS'05)*, January, 2005.
113. Kewei Sha and Weisong Shi, "Revisiting the Lifetime of Wireless Sensor Networks," in *Proceedings of ACM SenSys'04 (two page summary)*, Baltimore, MD, November 3-5, 2004.
114. Hanping Lufei, Weisong Shi, and Lucia Zamorano, "Communication Optimization for Image Transmission in Computer-Assisted Surgery," Technical Report MIST-TR-2004-007, March 2004. Accepted by the 2004 Congress of Neurological Surgeons Annual Meeting (abstract presentation), San Francisco, October 2004.
115. Hanping Lufei, Weisong Shi, and Lucia Zamorano, "On the Effects of Bandwidth Reduction Techniques in Distributed Applications," in *Proceedings of International Conference on Embedded and Ubiquitous Computing (EUC-04)*, Aizu, Japan, August 2004. (Accept rate: 25%)
116. Weisong Shi, Sivakumar Sellamuthu, Kewei Sha, and Loren Schwiebert, "QueryAgent: A General Query Processing Tool for Sensor Networks," in *Proceedings of the International Workshop on Ad Hoc and Sensor Networks*, in conjunction with 2004 International Conference on Parallel Processing (ICPP-2004), August 2004, Montreal Canada.
117. Hanping Lufei, Sivakumar Sellamuthu, Sharun Santhosh, and Weisong Shi, "Application-Aware Service Differentiation in PAWNs," in *Proceedings of the 2004 ICPP*, August 2004, Montreal, Canada.
118. Daniel Brodie, Amrish Gupta, and Weisong Shi, "Accelerating Dynamic Web Content Delivery Using Keyword-based Fragment Detection," in *Proceedings of the 4th International Conference on Web Engineering (ICWE 2004)*, July 28-30, 2004, Munich. (Accept ratio: 13%) (**The Best Paper Award**)
119. Zhaoming Zhu, Yonggen Mao, and Weisong Shi, "Workload Characterization of Uncacheable HTTP Traffic," in *4th International Conference on Web Engineering (ICWE 2004)*, July 28-30, 2004, Munich. (short paper accept ratio: 32%)
120. Weisong Shi, Sharun Santhosh, and Hanping Lufei, "Cegor: An Adaptive Distributed File System for Heterogeneous Network Environments," in *Proceedings of the 10th IEEE International Conferences on Parallel and Distributed Systems (ICPADS)*, July 7-9, 2004. California. (accept ratio: 30%)
121. Yonggen Mao, Zhaoming Zhu, and Weisong Shi, "Peer-to-Peer Web Caching: Hype or Reality?" in *Proceedings of the 10th IEEE International Conferences on Parallel and Distributed Systems (ICPADS)*, July 7-9, 2004. California. (accept ratio: 30%).
122. Zhaoming Zhu and Weisong Shi, "HALF: A Highly Accurate Landmark-Free Localization Algorithm for Wireless Sensor Networks," in the fifth ACM International Symposium on Mobile Ad Hoc Networking and Computer (MobiHoc poster), May 24-26, 2004, Tokyo, Japan.
123. Daniel Brodie, Amrish Gupta, and Weisong Shi, "Keyword-based Fragment Detection for Dynamic Web Content Delivery," in *Proceedings of 2004 World Wide Web Conference (poster)*, May 17-22, 2004, New York. (accept ratio: 50%).
124. Vikrant Mastoli, Valmik Desai, and Weisong Shi, "SEE: A Service Execution Environment for Edge Computing," in *Proceedings of 2003 IEEE Workshop on Internet Applications*, Jun 23-24, 2003.
125. Weisong Shi, Kandarp Shah, Yonggen Mao and Vipin Chaudhary, "Tuxedo: A Peer-to-Peer Caching System," in *Proceedings of 2003 International Conference on Parallel and Distributed Processing Techniques and Applications (PDPTA'03)*, June 23-26, 2003, Las Vegas, Nevada, USA.

126. Weisong Shi, Eli Collins and Vijay Karamcheti, "Modeling Object Characteristics of Dynamic Web Content," in Proceedings of the IEEE Globecom 2002 conference, Taipei, China, November 17-21, 2002. ( The full version is available as NYU computer science department technical report TR2001-822).
127. Weisong Shi, Randy Wright, Eli Collins and Vijay Karamcheti, " Workload Characterization of a Personalized Web Site — and Its Implications for Dynamic Content Caching," in Proceedings of the 7th International Conference on Web Content Caching and Distribution (WCW'02), Boulder, Colorado, August 14-16, 2002. (The full version is available as NYU computer science department technical report TR2002-829, April, 2002).
128. Weisong Shi, Eli Collins and Vijay Karamcheti, "DYCE: Model-based Emulation Dynamic Web Content," in *Poster Proceedings of the 11th International World Wide Web Conference (WWW 2002)*, Hawaii, May 7-11, 2002.
129. Weisong Shi and Vijay Karamcheti, "CONCA: An Architecture for Consistent Nomadic Content Access," *Proceedings of workshop on Caching, Coherence, and Consistency (WC3 '01)*, Sorrento, Italy, June, 2001.
130. Xiaodong Fu, Weisong Shi, Anatoly Akkerman and Vijay Karamcheti, "CANS: Composable, Adaptive Network Services Infrastructure," in *Proceedings of the 3rd USENIX Symposium on Internet Technologies and Systems (USITS'01)*, San Francisco, March 2001.
131. Zhiyu Zhou, Weisong Shi and Zhimin Tang, "A Novel Multicast Scheme to Reduce Cache Invalidation Overheads in DSM Systems," in *Proceedings of the 19th IEEE International Performance, Computing and Communication Conference(IPCCC'2000)*, February 20-22, 2000, Phoenix, AZ, USA.
132. Weisong Shi and Zhimin Tang, "Affinity-based Self Scheduling for Software Shared Memory System," in *Proceedings of 6th International Conference on High Performance Computing(HiPC'99)*, December 17-20, Calcutta, India.
133. Weisong Shi, Yongjie Mao, and Zhimin Tang, "Communication Substrate for Software DSMs," in *Proceedings of the 11th IASTED International Conference on Parallel and Distributed Computing and Systems*, November 3-6, 1999, MIT, Boston, USA.
134. Weiwu Hu, Weisong Shi, and Zhimin Tang, "Write Detection in Home-based Software DSMs," P. Amestoy, et.al (eds), *EuroPar'99 Parallel Processing*, Lecture Notes in Computer Science, No. 1685, Springer-Verlag, pp. 909-914.
135. Weiwu Hu, Weisong Shi, and Zhimin Tang, "Home Migration in Home-based Software DSMs," in *Proceedings of ACM 1st Workshop on Software DSMs (WSDSM)*, in conjunction with 13rd ICS'99, Rhodes, Greece, June, 1999.
136. Weisong Shi and Zhimin Tang, "Dynamic Computation Scheduling for Load Balancing in Home-based Software DSMs," in *Proceedings of the 1999 International Symposium on Parallel Architectures, Algorithms and Networks (I-SPAN'99)*, IEEE CS Press, Perth, Australia, pp.248-253, June, 1999.
137. Weiwu Hu, Weisong Shi, Zhimin Tang, "JIAJIA: An SVM System Based on A New Cache Coherence Protocol," In *Proceedings of the High Performance Computing and Networking (HPCN'99)*, April, 1999, LNCS 1593, pp. 463-472, Springer, Amsterdam, Netherlands.
138. Weisong Shi, Jifu Ma(\*), and Zhimin Tang, "High Efficient Parallel Computation of Resonant Frequencies of Waveguided Loaded Cavities on JIAJIA Software DSM System,"( (\*) Pennsylvania State University. Electrodynamic Communication Research Laboratory.) In *Proceedings of the High Performance Computing and Networking (HPCN'99)*, April, 1999, LNCS 1593, pp. 1147-1150, Amsterdam, Netherlands.
139. Weiwu Hu, Weisong Shi and Zhimin Tang, "Reducing System Overheads in Home-based Software DSMs," In *Proceedings of the 13th IEEE International Parallel Processing Symposium & 10th Symposium on Parallel and Distributed Processing(IPPS/SPDP'99)*, IEEE CS Press, pp. 167-173, April, 1999, San Juan, Puerto Rico.
140. M.Rasit.Eskicioglu(\*), T. Anthony Marsland(\*), Weiwu Hu, Weisong Shi, "Evaluation of JIAJIA Software DSM System on High Performance Architectures", In *Proceedings of the 32nd Hawaii International Conference on System Sciences(HICSS-32)*, Hawaii, U.S.A, January, 1999.( (\*) University of Alberta).

## Chapters (7)

1. Zujie Ren, Xiaohong Zhang and Weisong Shi, Resource Scheduling in Data-Centric Systems, in Handbook on Data Centers, S. U. Khan and A. Y. Zomaya, Eds., March 17, 2015, pp. 1307-1330, Springer-Verlag, New York, USA.
2. Tieying Zhang, Xueqi Cheng and Weisong Shi, P2P Streaming Content Delivery Systems, Next Generation Content Delivery Infrastructures: Emerging Paradigms and Technologies, edited by Giancarlo Fortino and Carlos E. Palau, IGI Global, 2012.
3. Hui Chen and Weisong Shi, "Power Measuring and Profiling: State-of-the-Art", Handbook on Energy-aware and Green Computing, edited by Ishfaq Ahmad and Sanjay Ranka, Chapman and Hall/CRC Press Taylor and Francis Group LLC. Early 2011.
4. John P. Walters, Zhengqiang Liang, Weisong Shi, and Vipin Chaudhary, "Wireless Sensor Networks Security: A Survey," in Security In Distributed, Grid, and Pervasive Computing, Yang Xiao (Eds), Auerbach Publications, pp. 367-410, April 2007.



5. Hanping Lufei and Weisong Shi, "An Adaptive Encryption Protocol in Mobile Computing," book chapter of Mobile/Wireless Network Security, edited by Y. Xiao, S. Sheng, and D. Zhu, Springer 2007. (invited)
6. 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 Phoah, Thomas F. La Porta and Christopher Griffin, Wiley-IEEE Press, pp. 264-291, May 2006.
7. Haiying Shen, Aaron. Brodie, Cheng-Zhong Xu and Weisong Shi, "Scalable and Secure Overlay Networks," book chapter of "Theoretical and Algorithmic Aspects of Sensor, Ad Hoc Wireless and Peer-to-Peer Networks," CRC Press, June 2005.

## **UNIVERSITY SERVICES (last five years)**

- 2020- Chair, Wayne Mobility Initiative
- 2015-2017 Co-Chair Cross-Boarder Health Initiative
- 2015-2016 Chair of Department Faculty Search Committee
- 2015-2016 College Review Committee
- 2015-2016 University Patent Advisory Committee
- 2015-2016 College Steering Committee
- 2012-2013 Department Graduate Committee Chair
- 2012-2013 University International Sources for Research Collaboration Committee
- 2011-2013 College of Engineering Steering Committee member
- 2011-2012 University Research Grant Committee
- 2011-2012 Chair of Department Faculty Search Committee
- 2011-2013 College of Engineering Research Advisory Committee
- 2011-2012 Department Graduate Committee member
- 2011-2012 Department Budget Advisory Committee
- 2011-2012 helping developing "3+2" program with China Universities
- 2011 Provost's Task Force for Streamlining Processes
- 2011 University Postdoctoral Advisory Council
- 2010-2011 Department Graduate Committee
- 2010-2011 Department Budget Advisory Committee
- 2010-2011 Department Personal and Salary Committee
- 2010 University Career Development Chair Award Committee

## **STUDENT ADVISING**

### **Current Students**

- PH.D. Students (11): Lanyu Xu, Daniel Ouellette, Sidi Lu, Liangkai Liu, Samira Taghavi, Prabhjot Kaur, Raef Abdallah, Xiaoda Cong, Ren Zhong, Yongtao Yao, Zhaofeng Tian
- MS students (3): Faezeh Vaseghiamiri, Mohsen Kamyab, Mustafa Ahmed
- Undergraduate Students (2): Michael Moore (REU), Charles Guye (MI-LSAMP)

**Past Postdoc (2)**

- Ruijun Wang
- Xiaopei Wu

**Past Ph.D. Students (20)**

- Qu Yuan Luo (Ph.D., December 2020, Southwest Jiaotong University, co-advised with Changle Li)
- Xingzhou Zhang (Ph.D., May 2020, CAS/Institute of Computing Technology, co-advised with Zhiwei Xu)
- Yifan Wang (Ph.D., May 2020, CAS/Institute of Computing Technology, co-advised with Zhiwei Xu)
- Mohit Kumar (Ph.D., October 2019, Oak Ridge National Laboratory)
- Bing Luo (Ph.D., October 2019, Henry Ford Health Systems)
- Jie Cao (Ph.D., August 2018, Eastern Michigan University)
- Quan Zhang (Ph.D., January 2018, Salesforce.com)
- Lingmei Ren (Ph.D., May 2016, Shandong University of Science and Technology)
- Youhuizi Li (Ph.D., January 2016, Hangzhou Dianzi University)
- Hui Chen (Ph.D., November 2015, Amazon)
- Lingjun Fan (Ph.D., May 2014, Chinese Academy of Sciences, Co-advised with Guojie Li)
- Grace Metri (Ph.D., April 2014, Intel, Co-advised with Monica Brockmeyer)
- Shinan Wang (Ph.D., February 2014, Magna Electronics)
- Yong Xi (Ph.D., November 2012, Amazon, Co-advised with Loren Schwiebert)
- Tung Nguyen (Ph.D., August 2012, Intelligent Automation Inc.)
- Guoxing Zhan (Ph.D., April 2012, Cisco)
- Zhengqiang Liang (Ph.D., January 2010, Bloomberg L.P.)
- Safwan Al-Omari (Ph.D., December 2008, Lewis University)
- Zhifeng Yu (Ph.D., December 2008, T-Systems)
- Kewei Sha (Ph.D., November 2008, Oklahoma City University)
- Hanping Lufei (Ph.D., July 2007, eBay)

**Past Masters Students (14)**

- Sheng Tan, (M.S., August 2018, TBD)
- Javad Roostaei, (M.S., June 2018, Quantify)
- Jingwen Zhang (M.S., March 2014, EMC)
- Guisi Ni (M.S., August 2014, Google)
- Mingyang Xu (M.S., July 2014, NCSU Ph.D. program)
- Ruining Sun (M.S., May 2014, AT&T)
- Harish Balasubramanian (M.S., February 2014, ELEKTROBIT Automotive)

- Dajun Lu, (M.S., January 2014, Amazon)
- Soumyasudharsan Srinivasaraghavan (M.S., February 2012, Valeo Inc.)
- Chenjia Wang (M.S., July 2009, Revstone Industry)
- Brandon Szeliga, (M.S., July 2007, Lockheed Martin)
- Jayashree Ravi (M.S., December 2005, Chrysler)
- Sharun Santhosh (M.S., August 2004, Intel)
- Yonggen Mao (M.S., August 2004, EDS)

#### **Past Undergraduate Students (8)**

- Chad Fisher (WSU Computer Science)
- Mary Hooker
- Yuk Cheung
- Raymond Lemon (WSU Computer Science)
- Delyan Raychev (Facebook)
- Jacqueline Brown (IBM)
- Tony Cutway (Sylvania Schools)
- Daniel Brodie

### **PROFESSIONAL PARTICIPATION**

#### **Professional Organization**

- Institute of Electrical and Electronics Engineers (IEEE), Fellow  
Chair of IEEE Computer Society Technical Committee of the Internet (TCI) (2012 - 2016)  
Fellow evaluation committee of IEEE Computer Society, 2017, 2018
- Association for Computing Machinery (ACM), Distinguished Member
- The Advanced Computing Systems Association (USENIX)

#### **Grant Review Panels**

- National Science Foundation, 2009-2012, 2015, 2016, 2017
- National Natural Science Foundation of China
- Hong Kong Research Council
- Qatar National Research Fund

#### **Editorships**

1. Editor-In-Chief, Elsevier Smart Health, 2016 -
2. Associate Editor-In-Chief, IEEE Internet Computing, 2017-
3. Associate Editor of IEEE Transactions on Services Computing, 2016-
4. Associate Editor of ACM Transactions on Internet of Things, 2018-

5. Associate Editor of IEEE Transactions on Computers, 2015-2016
6. Editor of Digital Communications and Networks, 2018 -
7. Editor of IEEE Blockchain Newsletter, 2018 -
8. Editor of IEEE Internet Computing, 2014 -
9. Associate editor of Springer Computing Journal, 2012-
10. Editor of Elsevier Sustainable Computing: Informatics and Systems (SUSCOM), 2011-
11. Editor of Journal of Computer Science and Technology (JCST), 2010-
12. Editor of International Journal of Sensor Networks (IJSNet), 2009-
13. Guest Editor of IEEE Internet Computing Magazine, Special Issue on Live Video Analytics, July/August 2019.
14. Guest Editor of IEEE Transactions on Sustainable Computing, Special Issue on Energy Efficiency for Novel Architectures and Systems (2018)
15. Guest Editor of IEEE Transactions on Services Computing, Special Issue on Edge/Fog Computing and Services, 2019.
16. Guest Editor of IEEE Internet Computing Magazine, Special Issue on Energy-Efficient Data Centers, July/August 2017.
17. Guest Editor of IEEE Internet Computing Magazine, Special Issue on Fog Computing, March/April 2017.
18. Guest Editor of IEEE Internet Computing Magazine, Special Issue on Trust and Reputation Management, Sep/Oct 2010.
19. Guest Editor of International Journal of Sensor Networks, Special Issue on Data Quality Management in Wireless Sensor Networks, 2009.
20. Guest Editor of Journal of Computer Science and Technology, Special Issue on Trust and Reputation Management in Future Computing Systems and Applications, April 2009.
21. Guest Editor of Journal of Parallel and Distributed Computing Special Issue on Security in Grid and Distributed Systems, 2006.

#### **Steering/Advisory Committees**

1. Steering Committee Chair of IEEE/ACM International Conference on Connected Health: Applications, Systems and Engineering Technologies (CHASE), 2016 -
2. Steering Committee Chair of ACM/IEEE Symposium on Edge Computing (SEC), 2016 -
3. Advisory Board of IEEE Internet of Things Journal, 2015 -
4. Steering Committee Member of 2018 -
5. Steering Committee Member of HotWeb 2015 -
6. Steering Committee Member of International Green Computing Conference (IGCC) 2013 -
7. Advisory Board of "Next Generation Content Delivery Infrastructures: Emerging Paradigms and Technologies," 2012
8. Steering Committee Member of International Conference on Network and Parallel Computing (NPC) 2011 -

#### **Organization Committees**

1. 2020 Program Co-Chair, MetroCAD

2. 2019 Program Chair, MetroCAD
3. 2019 Panel Chair, SEC
4. 2018 Program Chair of MetroCAD
5. 2018 General Co-Chair of SEC
6. 2018 General Co-Chair of CHASE
7. 2017 General Co-Chair of NPC
8. 2017 General Chair of IGSC
9. 2017 Track Co-Chair of ICDCS on “Edge and Fog Computing”
10. 2016 Program Co-Chair of IGSC
11. 2016 General Co-Chair of CHASE
12. 2016 Program Co-Chair of USENIX CoolDC
13. 2016 Track Co-Chair of ICPP on “Datacenters and Cloud Computing”
14. 2015 General Co-Chair of HotWeb
15. 2014 Workshop Chair of IGCC
16. 2013 Workshop Chair of IGCC
17. 2013 Steering Chair of PMP 2013
18. 2012 Program Co-Chair of PMP 2012
19. 2012 Vice Track Chair of IEEE AINA Distributed and Parallel Systems
20. 2012 Workshop Co-Chair of IFIP NPC
21. 2011 Program Co-Chair of PMP 2011
22. 2011 Program Co-Chair of IEEE CSE
23. 2011 Program Co-Chair of IFIP NPC
24. 2011 Program Co-Chair of UPGRADE-CN
25. 2010 Workshop Co-Chair of IEEE APSCC 2010
26. 2009 CollaborateCom Program Co-Chair
27. 2009 WWW Tutorials Deputy Chair
28. 2008 General Co-Chair of AHPCN
29. 2008 Workshop on Trust and Reputation Management in Massively Distributed Computing Systems (TRAM 2008)  
(Program Co-Chair)
30. 2008 WWW Tutorials Deputy Chair
31. 2008 HPCC Workshop Co-Chairs
32. 2007 Workshop on Trust and Reputation Management in Massively Distributed Computing Systems (TRAM 2007).  
**(Funding Co-Chair)**.
33. 2007 IEEE UbiSafe (Publicity Chair).

34. 2006 WWW 2006 (Poster Track Deputy Chair).
35. 2006 2nd International Workshop on Security in Systems and Networks (Program Chair).
36. 2005 WWW (Poster Track Chair)
37. 2004 WWW (Poster Track Deputy Chair)

#### **Program Committees**

1. 2020 ICDCS
2. 2020 HotEdge
3. 2020 IPDPS
4. 2020 IoTDI
5. 2020 WWW
6. 2020 IC2E
7. 2019 ICCD
8. 2019 IoTDI
9. 2019 WWW
10. 2019 IPDPS
11. 2019 HotEdge
12. 2018 HotEdge
13. 2018 ICDCS
14. 2018 IPDPS
15. 2018 IC2E
16. 2017 SEC
17. 2017 ISLPED
18. 2017 IC2E
19. 2016 HotWeb
20. 2016 IC2E
21. 2015 IGSC
22. 2015 ICPP
23. 2015 CCGrid
24. 2014 IGCC
25. 2014 ICPP
26. 2013 BigData 2013
27. 2013 CCGrid
28. 2012 HotPower

29. 2012 ICDCS
30. 2012 WWW
31. 2012 ICWE
32. 2011 NAS
33. 2011 ICPP
34. 2011 ICDCS
35. 2011 ICWE
36. 2010 GreenCom
37. 2010 MSN
38. 2010 Pervasive Health
39. 2010 CDN
40. 2010 WWW
41. 2009 ICWE
42. 2008 EUC
43. 2008 IEEE ICPADS
44. 2008 IEEE CollaborateCom
45. 2008 ACM 2nd International Workshop on HealthNet
46. 2008 ICPP
47. 2008 IEEE MASS
48. 2008 Workshop on Wireless Ad Hoc and Sensor Networks (WWASN).
49. 2008 IEEE VTC/Spring
50. 2007 MSN
51. 2007 IEEE IRI.
52. 2007 IEEE UPGRADE-CN, in conjunction with HPDC '07.
53. 2007 IEEE ICPADS.
54. 2007 ICPP
55. 2007 Workshop on Wireless Ad Hoc and Sensor Networks (WWASN).
56. 2007 IFIP Embedded and Ubiquitous Computing (EUC).
57. 2007 IEEE AINA.
58. 2006 IEEE CollaborateCom.
59. 2006 IEEE EIT 2006.
60. 2005 IEEE HPCAsia.
61. 2005 IFIP Embedded and Ubiquitous Computing (EUC).

62. 2005 International Conference on Wireless Networks
63. 2005 International Workshop on Systems and Network Security
64. 2003 8th International Workshop on Web Caching and Content Distribution (WCW)

### **Journal Referring**

1. IEEE Transactions on Services Computing
2. IEEE Transactions on Cloud Computing
3. IEEE Transactions of Computers
4. IEEE Transactions on Parallel and Distributed Systems
5. IEEE Transactions on Knowledge and Data Engineering
6. IEEE Transactions on Systems, Man, and Cybernetics
7. ACM Transactions on Internet Technology
8. ACM Wireless Networking
9. ACM Journal of Multimedia
10. ACM Journal of Mobile Network and Applications (MONET)
11. Journal of Parallel and Distributed Computing
12. Computer Networks
13. Future Generation Computer Systems
14. IEEE Internet Computing
15. Computer Communications
16. Journal of Systems and Software
17. IEEE Wireless Communication Magazine
18. IEEE Network Magazine
19. IEEE Distributed Systems Online
20. Internet Encyclopedia
21. Performance Evaluation Journal
22. International Journal of Security and Networks
23. International Journal of Sensor Networks
24. International Journal of Distributed Sensor Networks
25. IEICE Transactions on Information and Systems
26. Journal of Computer Science and Technology
27. Journal of Software (Chinese)
28. China Computer Journal (Chinese)

### **Invited Talks (80)**



1. Yunan University, Edge Intelligence, Jan 6, 2020.
2. Case Western Reserve University, Edge Intelligences and Its Applications in CAVs, Nov. 14, 2019.
3. NACSAE, Edge Computing in Autonomous Driving, Sep. 28, 2019.
4. XDU, Behavior-Driven Health Management and Its Application to Datacenters and EVs,, July 27, 2019.
5. BUPT, Behavior-Driven Health Management and Its Application to Datacenters and EVs, July 22, 2019.
6. GM, Behavior-Driven Health Management and Its Application to Datacenters and EVs, June 26, 2019.
7. Keynote@ China Edge Computing Symposium, Edge Computing and Intelligence Connected Driving, May 11, 2019.
8. Featured speaker at BioIT World Conference and Expos Track on Edge Computing, April 16, 2019. Boston.
9. Keynote @ World Artificial Intelligence Conference Track on Edge Computing. Edge Intelligence: Edge Computing in the Intelligent Era, September 18, 2018.
10. University of Science and Technology in China, Edge Computing: State-of-the-Art and Future Directions, August 17, 2018. (Department 60th Year Anniversary series)
11. Keynote @ the 12th Annual Conference on Advanced Computer Architecture (ASA'18) , Edge Computing: State-of-the-Art and Future Directions, August 11, 2018.
12. Southwest University, Edge Computing: State-of-the-Art and Future Directions, August 1st, 2018.
13. Baidu Inc., Edge Computing: State-of-the-Art and Future Directions, July 19, 2018.
14. Tsinghua University, Edge Computing: State-of-the-Art and Future Directions, July 17, 2018. (Department 60th Year Anniversary series)
15. UESTC, Edge Computing: State-of-the-Art and Future Directions, July 12, 2018.
16. Keynote @ SCC 18, Edge Computing: State-of-the-Art and Future Directions, July 10, 2018.
17. Ford's Autonomous Vehicles & Controls Lunch & Learn Seminar Series, Research Activities at the CAR Lab, June 15, 2018.
18. SouthEast University, Edge Computing: State-of-the-Art and Future Directions, May 21, 2018.
19. Beijing University of Post and Telecommunication, Edge Computing: State-of-the-Art and Future Directions, May 23, 2018.
20. Central South University, Edge Computing: State-of-the-Art and Future Directions, May 16, 2018.
21. Keynote @ 2018 2nd China Edge Computing Symposium, Edge Computing: State-of-the-Art and Future Directions, May 13, 2018.
22. Distinguished talk @ University of North Texas, Edge Computing: A New Computing Model for IoE, April 30, 2018.
23. Distinguished Speaker @ IBM Research Almaden, Edge Computing: A New Computing Model for IoE, September 21, 2017.
24. Beijing Normal University, Edge Computing: Vision and Challenges, July 14, 2017.
25. Keynote@ MobiMedia17, Edge Computing: Vision and Challenges, July 13, 2017.
26. Keynote@ China Edge Computing Symposium, Edge Computing: Vision and Challenges, July 10, 2017.
27. Xidian University, Edge Computing: Vision and Challenges, July 7, 2017.

28. Ocean University of China, Edge Computing: Vision and Challenges, July 3, 2017.
29. Shangdong University of Science and Technology, Edge Computing: Vision and Challenges, July 3, 2017.
30. Baidu Inc., Edge Computing: Vision and Challenges, May 24, 2017.
31. Sun Yat-Sen University, Edge Computing: Vision and Challenges, May 17, 2017.
32. Tongji University, Edge Computing: Vision and Challenges, May 12, 2017.
33. University of Buffalo, Edge Computing: Vision, Challenges and Beyond, Nov. 29, 2016.
34. Chinese Academy of Sciences, Edge Computing: Vision and Challenges, Oct 16, 2016.
35. Shandong University, Edge Computing: Vision and Challenges, Oct. 15, 2016.
36. Inspur Technologies, A Case for Edge Computing, Oct. 15, 2016.
37. University of Science and Technology of China, Energy-Efficient Computing: Vision and Challenges, May 2016.
38. Oakland University, Mobile Healthcare, April 2016.
39. University of Michigan Dearborn, Toward Energy-Efficient Computing, Jan 15, 2016.
40. Chinese Academy of Sciences, Institute of Computing Technology, Distinguished Seminar Talk, Toward Energy-Efficient Computing, Oct 30, 2015.
41. Keynote at IEEE HealthCom'15, Wireless Health: Opportunities, Challenges and Beyond, Oct 15, 2015
42. Michigan Technological University, Distinguished Seminar Talk, Toward Energy-Efficient Computing, Oct 8, 2015
43. Georgia State University, Toward Energy-Efficiency Computing, June 2, 2015.
44. VMWare, Porcupine: Porcupine: Towards Realistic Benchmarking for Cloud File Systems, Feb. 18, 2015.
45. Keynote at HPCChina 2012, Toward High Efficiency Computing in the Big Data Era, Oct 30, 2012. ZhangJiaJie, China.
46. Baidu Inc., Toward High Efficiency Computing, Oct 29, 2012. Beijing, China.
47. Keynote at HPDIC, a workshop in conjunction with IPDPS 2012, May 25, 2012, Shanghai, China.
48. Wayne State University President Inaugural Academic Symposium, Toward Trust and Sustainable Cloud Computing, April 15, 2011.
49. Tongji University (Shanghai Graduate Summer School), Reflections on Ph.D. Programs: China vs. USA, July 16, 2010.
50. Tsinghua University, The ROSE project - from green IT to green life, July 13, 2010.
51. Shanghai Jiaotong University, Toward Trust and Sustainable Cloud Computing, June 28, 2010.
52. Sun Yat-Sen University, Toward Trust and Sustainable Cloud Computing, June 24, 2010.
53. **Distinguished Lecture** at Beijing University of Technology, Toward Trust and Sustainable Cloud Computing, June 18, 2010.
54. Chinese Academy of Sciences, Institute of Microelectronics, The ROSE project - from green IT to green life, June 18, 2010.
55. Xian Jiaotong University, Toward Trust and Sustainable Cloud Computing, June 9, 2010.
56. Huawei Cooperation, Research Activities in the MIST group, June 4, 2010.
57. Huzhong University of Science and Technology, Toward High Efficient Computing, May 24, 2010.

58. IUPUI, Orchis: Consistency-driven Deceptive Data Detection and Filtering in Sensing Systems, Oct 23, 2009.
59. Tongji University, Adaptation in Dynamic Computing Systems: Two Perspectives, May 22, 2009.
60. Institute of Software, Chinese Academy of Sciences, Adaptation in Dynamic Computing Systems: Two Perspectives, March 30, 2009.
61. Wayne State University, Department of Electrical and Computer Engineering, Orchis: Consistency-Driven Energy-Efficient Data Quality Management in Sensing Systems, Oct 29, 2008.
62. Georgetown University, Data Quality Management in Sensing Systems, October 10, 2008.
63. University of British Columbia, Orchis: Consistency-Driven Energy-Efficient Data Quality Management in Sensing Systems, May 15, 2008.
64. Simon Fraser University, Orchis: Consistency-Driven Energy-Efficient Data Quality Management in Sensing Systems, May 5, 2008.
65. Peking University, Mechanisms for Resource Sharing in Non-Cooperative Environments, August 22, 2007.
66. Institute of Computing Technology, Chinese Academy of Sciences, Dynamic Protocol Adaptation in Heterogeneous Environments, August 21, 2007.
67. Institute of Software, Chinese Academy of Sciences, Fractal: An Application Level Protocol Adaptation Framework for Heterogeneous Environments, August 14, 2007.
68. Institute of Computing Technology, Chinese Academy of Sciences, On Being a Scientist, May 18, 2007.
69. Xidian University, Mechanisms for Trusted Resource Sharing in Collaborative High-End Computing Platforms, May 15, 2007.
70. Xidian University, Adaptive Privacy-Preserving Authentication in Vehicular Networks, May 14, 2007.
71. University of Delaware, Mechanisms for Resource Sharing in Non-Cooperative Environments, May 9, 2007.
72. Telcordia Inc., Adaptive Privacy-Preserving Authentication in Vehicular Networks, May 4, 2007.
73. Albion College, Opportunities and Challenges of Wireless Sensor Networks: A Systems Perspective, Sep. 28 2006
74. Oakland University, Trusted Resource Sharing in Non-cooperative Environments, Feb. 2, 2006
75. Michigan State University, Dynamic Application Protocol Adaptation in Heterogeneous Environments, Nov. 11, 2005
76. Metro Detroit Science Teachers Association (MDSTA), Research on Mobile Systems, Security and Wireless Sensor Networks, October 29, 2005
77. CS Graduate Seminar, The landscape of computer security: Where are we now and where are we going? March 22, 2005.
78. Wayne State University. Department of Mathematics, The landscape of computer security, February 2005
79. Bell Lab, Two System Supports for Ubiquitous Content Access July 12, 2001
80. IBM T. J. Watson Research Center, Systems Support for Ubiquitous Content Access May 23, 2001