

Curriculum Vitae

Dr. Qiao Xiang

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Date of CV: June 2016

Education

- 2014 Ph.D. Wayne State University, Detroit, MI, Computer Science (advisor: Hongwei Zhang)
- 2011 M.S. Wayne State University, Detroit, MI, Computer Science (advisor: Hongwei Zhang)
- 2007 B.Eng Nankai University, Tianjin, China, Information Security (advisor: Xiaojie Yuan)
- 2007 B.Econ Nankai University, Tianjin, China, Economics (advisor: Jie Gao)

Training

- Aug 2012 Short Course on Parallel Programming, PAR Lab, University of California Berkeley

Work Experiences

- Nov 2015 – present. Postdoctoral Fellow, Department of Computer Science, Yale University, U.S.
- Jul – Oct 2015. Visiting Research Scientist, Department of Computer Science and Technology, Nankai University, China
- Apr 2014 – Apr 2015. Postdoctoral Fellow, School of Computer Science, McGill University, Canada
- May – Aug 2012. Research Intern, Computer Science Lab, Samsung Information Systems America, U.S.
- Sep – Nov 2006. Intern System Administrator, Center of Construction Information Technology, Tianjin Construction Administration Committee, China
- Jun – Sep 2006. Intern Software Engineer, Database System Lab, Nankai University, China

Research Interests

Software-Defined Networking, Wireless Cyber-Physical Systems, Internet of Things, Vehicle Networks, Green Computing and Smart Grid, Cloud Computing, Operating Systems, Real-time Systems, Game Theory and Network Economics, Network Security, Database Systems

Invited Talks

- 2016 Jun. Magellan: Automatic SDN Pipelining from Algorithmic Policies, In NSF DIMACS Workshop on SDN Algorithms, Rutgers University, New Jersey, US
- 2015 Aug. Emerging Topics in Wireless Networking, Nankai University, Tianjin, China
- 2015 May. Designing Real-Time, Reliable and Efficient Cyber-Physical Systems for Future Smart City, MIT, Massachusetts, US
- 2015 Apr. Towards Real-time, Reliable and Efficient Service in Wireless Cyber-Physical Systems, McDaniel College, Maryland, US
- 2014 Dec. In-Network Processing in Wireless Cyber-Physical Systems, China University of Petroleum, Beijing, China
- 2014 Dec. In-Network Processing in Wireless Control Systems: Experience and Case Studies, Nankai University, Tianjin, China

Systems/Projects

- 2016-now FAST: A Unified State-Dependent Control Plane Programming Framework for SDN, team member, Yale University,
- 2016-now EDTO: Dynamic Data Transfer Orchestration in Software Defined Exscale Networks, team lead, Yale University,

- 2015-now Maple: Algorithmic Policy Based SDN Programming Model, team member, Yale University,
- 2014-2015 VSmart: a smart vehicle testbed, team member, McGill University,
<https://cpslab.cs.mcgill.ca/projects/vsmart/>
- 2012 OmniOS: Scalable Microkernel Manycore Operating Systems, team member, Samsung Information Systems America (SISA)
- 2012 Enabling Encryption/Decryption on the User-End of Amazon S3FS, team leader, Wayne State University,
- 2009-2014 NetEye: Networked Embedded Sensing Testbed, team member, Wayne State University,
<http://neteye.cs.wayne.edu/>

Demos

- 2016 Jun. A Unified State-Dependent Control Plane Programming Framework for SDN, Global SDN-NFV Tech Conference'16, Yale University
- 2016 May. Dynamic scheduling in Software Defined Science Networks, Internet 2 Global Summit'16, Caltech-Yale Research Team
- 2015 VSMart testbed demonstration for academic and industrial visitors including Mathworks, Huawei, NSERC, etc. McGill University
- 2013 Jul. WiMAX Open XC (Prototyping in Metro Detroit) demo for the 17th GENI Engineering Conference, Wayne State University
- 2008-2012 Advanced NetEye sensing testbed demonstration for industrial and media visitors including BBN, Ford Research Center, Detroit future technology magazine, etc. Wayne State University

Services

- ARO Workshop on Software Defined Networking for Army Applications (SDNA), Web Chair, 2016
- International Journal of Wireless Communication (IJWC), Editorial Board Member, 2015-present
- ACM International Conference on emerging Networking EXperiments and Technologies (CoNEXT), Shadow TPC Member, 2015
- Euromicro Conference on Digital System Design (DSD), TPC Member, 2015-present
- IEEE International Conference on Computer Communications and Networks (ICCCN), TPC Member, 2015
- IEEE International Instrumentation and Measurement Technology Conference (I2MTC), TPC Member, 2012-present
- IEEE Sensors Applications Symposium (SAS), TPC Member, 2013-present
- International Conference on Network-Based Information Systems (NBIS), TPC Member, 2015
- International Conference on Smart Sensors and Application (ICSSA), TPC Member, 2015

Teaching activities

Yale University

- 2016 Spring Teaching Fellow: Computer Networks

Wayne State University

- 2007 – 2013 Lecturers: Introduction to Computer Science, Computer Operating Systems-Lab and Computer Architecture and Organization-Lab

2009 – 2013 Teaching Assistant for graduate courses: Network, Distributed and Concurrent Programming, Theory of Languages and Automata, Data Communication and Computer Networks, Advanced Computer Networking and Seminar in Networking, Distributed Systems and Parallel Systems

2009 – 2012 Teaching Assistant for undergraduate courses: Algorithm Design and Analysis, Introduction to Theoretical Computer Science, Computer Operating Systems and Introduction to Computer Networking

Nankai University

2006 Fall Lecturers: Database Systems-Lab and MFC programming-Lab

Teaching awards

2012 – 2013 Outstanding Teaching Award, College of Engineering, Wayne State University

Scientific/Academic honors

2016 – 2017 Postdoctoral Fellowship, Yale University

2014 – 2015 Postdoctoral Fellowship, McGill University

2007 – 2013 Graduate Teaching/Research Assistantships, Wayne State University

2006 First prize in the Entrepreneur Tournament Challenge Cup, Tianjin Medical University

2003 – 2007 Outstanding Student Scholarships (three times), Nankai University

References

Yang Richard Yang, Professor
Department of Computer Science, Yale University
Room 208A, 51 Prospect Street, New Haven, CT, 02138, United States
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Xue Liu, Associate Professor
School of Computer Science, McGill University
Room 318, 3480 University Street, Montreal, H3A 0E9, Canada
xueliu@cs.mcgill.ca

Hongwei Zhang, Associate Professor
Department of Computer Science, Wayne State University
Suite 3010, 5057 Woodward Avenue, Detroit, MI 48202, United States
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List of Publications

Book Chapter

- 2015 1. **Qiao Xiang**, Hongwei Zhang, In-Network Processing in Wireless Sensor Networks, *Handbook of Sensor Networking: Advanced Technologies and Applications, Chapter 4*, CRC Press

Journals

- 2016 6. H. Newman, M. Spiropulu, J. Balcas, J. Bendavid, T. Hendricks, D. Kcira, I. Legrand, A. Mughal, J.R. Vlimant (Caltech/HEP); P. Spentzouris, P. DeMar (Fermilab); I. Monga, C. Guok (ESnet/LBNL); K. Riley, W. Allcock, V. Vishwanath, L. Winkler (Argonne LCF); R.Y. Yang, M. Chen, G. Kai, X. Lin, **Q. Xiang**, J. Zhang (Yale) (alphabetical order except PI), Next Generation Exascale Network Integrated Architecture for HEP and Global Science, Whitepaper for US HPC Leadership
5. Linghe Kong, Daqiang Zhang, Zongjian He, **Qiao Xiang**, Jiafu Wan, Meixia Tao, Embracing Big Data with Compressive Sensing: A Green Approach in Industrial Wireless Networks, to appear in *IEEE Communications Magazine*, 2016
4. Linghe Kong, **Qiao Xiang**, Xue Liu, Xiao-Yang Liu, Xiaofeng Gao, Guihai Chen, Min-You Wu, ICP: Instantaneous Clustering Protocol for Wireless Sensor Networks, *Computer Networks*, special issue on "Internet of Things", 2016
- 2013 3. Xiaohui Liu, Hongwei Zhang, **Qiao Xiang**, Xin Che, Xi Ju, Taming Uncertainties in Real-Time Routing for Wireless Networked Sensing and Control, *IEEE Transactions on Smart Grid (TSG)*, special issue on "Smart Grid Communication Systems", 4(1), pp. 288-301, March 2013
- 2011 2. **Qiao Xiang**, Jinhong Xu, Xiaohui Liu, Hongwei Zhang, Loren J. Rittle, When In-Network Processing Meets Time: Complexity and Effects of Joint Optimization in Wireless Sensor Networks, *IEEE Transaction of Mobile Computing (TMC)*, 10(10), pp. 1488-1502, October 2011
- 2006 1. Yang Wang, Bo Meng, **Qiao Xiang**, Comparison on Survival Analysis of Traumatic Brain Injury Patients Treated at Normal Temperature and Mild Hypothermia, *Chinese General Practice*, December 2006

Conferences, Workshops and Posters

- 2016 13. Fanxin Kong, **Qiao Xiang**, Qinglong Wang, Xue Liu, On-line Event-Driven Scheduling for Electric Vehicle Charging via Park-and-Charge, to appear in *the 37th IEEE Real-Time Systems Symposium (RTSS'16)*, Acceptance rate: 23%
12. Kai Gao, Chen Gu, **Qiao Xiang**, Xin Wang, Yang Richard Yang, Jun Bi, RSAP: An On-Demand, Minimal Equivalent Routing State Abstraction Protocol, to appear in *IEEE ICNP 2016 Poster Session*, top 30% of all submitted full papers.
11. Kai Gao, Chen Gu, **Qiao Xiang**, Yang Richard Yang, Jun Bi, FAST: Enabling Simplified Programming Abstraction for Complex State-Dependent SDN Programming, to appear in *ACM SIGCOMM 2016 Poster Session*.
10. Xi Chen, Lei Rao, **Qiao Xiang**, Xue Liu, Fan Bai, DRIVING: Distributed Scheduling for Video Streaming in Vehicular Wi-Fi Systems, to appear in *ACM Multimedia 2016*, Acceptance rate: 20% = 52/260

9. **Qiao Xiang**, Linghe Kong, Xue Liu, Jingdong Xu, Wei Wang, Auc2Reserve: A Differentially Private Auction for Electric Vehicle Fast Charging Reservation, **Invited Paper**, to appear in *the 22th IEEE International Conference on Embedded and Real-Time Computing Systems and Applications (RTCSA'16)*
 8. Xi Chen, Linghe Kong, Xue Liu, Lei Rao, Fan Bai, **Qiao Xiang**, How Cars Talk Louder, Clearer and Fairer: Optimizing the Communication Performance of Connected Vehicles via Online Synchronous Control, *the 35th Annual IEEE International Conference on Computer Communications (INFOCOM'16)*, Acceptance rate: $18.25\% = 300/1644$
 - 2015 7. **Qiao Xiang**, Fanxin Kong, Xue Liu, Xi Chen, Linghe Kong, Lei Rao, Auc2Charge: An Online Auction Framework for Electric Vehicle Park-and-Charge, *the sixth International Conference on Future Energy Systems (ACM eEnergy'15)*, Acceptance rate: $22.8\% = 16/70$
 6. **Qiao Xiang**, Hongwei Zhang, Jianping Wang, Guoliang Xing, Shan Lin, Xue Liu, On Optimal Diversity in Network-Coding-Based Routing in Wireless Networks, *the 34th Annual IEEE International Conference on Computer Communications (INFOCOM'15)*, Acceptance rate: $19\% = 316/1640$
 5. **Qiao Xiang**, Xi Chen, Linghe Kong, Lei Rao, Xue Liu, Data Preference Matters: A New Perspective of Safety Data Dissemination in Vehicular Ad Hoc Networks, *the 34th Annual IEEE International Conference on Computer Communications (INFOCOM'15)* Acceptance rate: $19\% = 316/1640$
 - 2012 4. **Qiao Xiang**, Hongwei Zhang, QoS-Aware In-Network Processing for Mission-Critical Wireless Cyber-Physical Systems, *Doctoral Colloquium on the 10th ACM Conference on Embedded Networked Sensor Systems (DC SenSys'12)*
 3. Xiaohui Liu, Hongwei Zhang, **Qiao Xiang**, Xin Che, Xi Ju, Taming Uncertainties in Real-Time Routing for Wireless Networked Sensing and Control, *the 13th ACM International Symposium on Mobile Ad Hoc Networking and Computing (MobiHoc'12)*, Acceptance rate: $20\% = 24/120$
 - 2011 2. Xiaohui Liu, Hongwei Zhang, **Qiao Xiang**, Towards Predictable Real-Time Routing for Wireless Networked Sensing and Control, *the Cyber-Physical-Systems (CPS) Week Workshop on Real-Time Wireless for Industrial Applications (RealWin'11)*
 - 2009 1. **Qiao Xiang**, Jinhong Xu, Xiaohui Liu, Hongwei Zhang, Loren J. Rittle, When In-Network Processing Meets Time: Complexity and Effects of Joint Optimization in Wireless Sensor Networks, *the 30th IEEE Real-Time Systems Symposium (RTSS'09)*, Acceptance Rate: $< 20\%$
- Internet Draft
- 2016 2. **Qiao Xiang**, Harvey Newman, Greg Bernstein, Azher Mughal, Justas Balcas Traffic Optimization for ExaScale Science Applications, *Under review by IETF ALTO Working Group*
 - 2016 1. Jungzhuo Wang, Xudong Shen, Jingxuan Wang, **Qiao Xiang**, ALTO Extension: Endpoint Cost Service for Flows, *Under review by IETF ALTO Working Group*
- Dissertation, Thesis and Technical Report
- 2014 5. In-Network Processing for Mission-Critical Wireless Networked Sensing and Control: A Real-Time, Efficiency, and Resiliency Perspective *PhD Dissertation*, Wayne State University
 - 2011 4. When In-Network Processing Meets Time: Complexity and Effects of Joint Optimization in Wireless Sensor Networks, *Master Thesis*, Wayne State University

- 2009 3. **Qiao Xiang**, QoS-Assured In-Network Processing in Wireless Cyber-Physical Systems: A Survey, *Technical Report, Dependable Networking and Computing Group, Wayne State University*
- 2007 2. Dynamic Node Labeling Schemes in Native XML Database, *Bachelor Thesis, Nankai University*
1. The Development and Role of Institutional economic in Modern China Economy, *Bachelor Thesis, Nankai University*

Papers Under Review

9. **Qiao Xiang**, Fanxin Kong, Xi Chen, Lei Rao, Xue Liu, GreenBroker: Online Revenue Maximization for Electric Vehicle Park-and-Charge
8. **Qiao Xiang**, Hongwei Zhang, Jianping Wang, Guoliang Xing, Shan Lin, Xue Liu, Optimal Network-Coding-Based Routing in Wireless Networks: An Efficiency and Resiliency Approach
7. **Qiao Xiang**, Xi Chen, Linghe Kong, Lei Rao, Xue Liu, Exploring Data Preference for Safety Data Dissemination in Vehicular Ad Hoc Networks,
6. **Qiao Xiang**, Fanxin Kong, Xue Liu, Xi Chen, Linghe Kong, Lei Rao, Bid To Charge: Exploring Auction Design for Electric Vehicle Charging Stations
5. Xi Chen, **Qiao Xiang**, Xue Liu, High-Resolution 3D-Localization using FM Signal
4. Kai Gao, Chen Gu, **Qiao Xiang**, Xin Wang, Yang Richard Yang, Jun Bi. RSAP: An On-Demand, Minimal Equivalent Routing State Abstraction Protocol
3. Kai Gao, **Qiao Xiang**, Chen Gu, Yang Richard Yang, Jun Bi. SAFE: Toward Automation Function Store as a Novel Programming Abstraction for Complex State-Dependent SDN Programming
2. Linghe Kong, Xi Chen, **Qiao Xiang**, Yi Gao, Xue Liu, Sensory Data Sharing in Collaborative Robots
1. Xingjian Lu, Fanxin Kong, Xue Liu, Jianwei Yin, **Qiao Xiang**, Huiqun Yu, Bulk Savings for Bulk Transfers: Minimizing Energy Cost on Inter-Data-Center Traffic

Working Papers

6. **Qiao Xiang**, Linghe Kong, Dan Peng, and Yang Richard Yang, Online Scalable Load Balancing on Commodity SDN Switches
5. **Qiao Xiang**, Junchang Wang, Yang Richard Yang, Palo: Dynamic Compilation of Multi-Table Pipelining for Algorithmic SDN Programming
4. **Qiao Xiang**, Yunyue Li, Linghe Kong, Intrusion Detection Using Seismology Sensor Networks
3. **Qiao Xiang**, Yichen Qian, Linghe Kong, Yang Richard Yang, AmTRAC: Automatic, Data-Dependent, Efficient Programming for Smart City Applications
2. **Qiao Xiang**, Yang Richard Yang, Bulk Data Transfer in Software Defined Data Intensive Networking
1. **Qiao Xiang**, Xue Liu, Linghe Kong, Data Management in Smart Energy Systems: A Survey