Xin Li

Contact Information

338 Bryant Street
Mountain View, CA 94041

Phone: (951)743-9121
Email: lixinchengdu@gmail.com
http://lixinchengdu.github.io/academic/index.html

Research Interests

Computer Networking, Distributed Systems, Security, Internet of Things

Education

University of California Santa Cruz (UCSC), Santa Cruz, CA

Ph.D. Computer Engineering, 2016-2018.

- Advisors: Dr. Chen Qian

University of Kentucky (UK), Lexington, KY

Ph.D. Candidate, Computer Science, 2013-2016.

- Advisors: Dr. Chen Qian

University of California Riverside (UCR), Riverside, CA

M.S., Electrical Engineering, 2012-2013.

University of Electronic Sci&Tech of China (UESTC), Chengdu, China

B.Eng., Communication Engineering, 2008-2012.

Professional Experience

Member of Technical Staff 12/2018 - now

VMware Inc., Palo Alto, CA

- Improve the write/read throughput of a distributed data store used by multiple products of VMware.

Software Engineer Intern 06/2017 - 09/2017

Facebook Inc., Seattle, WA

- Explore the resource utilization profile for for Sharded Services at Facebook scale.

Research Experience

Research Assistant 09/2016 - 08/2018

Department of Computer Engineering,
University of California Santa Cruz
Supervisor: Dr. Chen Qian

- Design a novel framework aiming to ensure authenticity and integrity of non-end-to-end communications for emerging IoT applications. This work improves the signing/verifying throughput compared to state-of-art solutions.
- Design a communication framework for the controller sending commands to actuation devices in the environment of Industrial Internet of Things (IIoT). This work significant enhances the security features IIoT networks in an efficient manner.

Research Assistant 08/2013 - 08/2016

Department of Computer Science,
University of Kentucky
Supervisor: Dr. Chen Qian

- Propose a novel and efficient virtual network function placement algorithm to enforce network policies without interfering other network control applications. By leveraging a light-weight virtual network function framework, ClickOS, the system is able to react quickly to traffic dynamics.
- Propose a new tenant networking abstraction model in multi-tenant clouds and associated virtual machine placement algorithm which optimizes the network bandwidth usage under the reliability requirements from tenants.
- Design a low-complexity packet scheduling algorithm for fair multi-resource sharing among traffic flows. The efficiency of the proposed algorithm is achieved by leveraging the power law distribution over flow size: Precise fair scheduling is only strictly enforced among elephant flows. Elephant flows are identified through the shielded count-min sketch. Mice flows are processed in FIFO fashion. Mice flows always have higher priority than elephant flows.
- Study on a new collaborative distributed monitor scheme which load balances the monitoring tasks by taking the advantage of the global information gained by the central controller. Each switch is installed a novel two-stage Bloom filter to define the monitor tasks in data plane: The first stage is used to identify the set of flows to be monitored in the switch and the second stage indicates the specific monitoring tasks to take.

Research Assistant 01/2016 - 05/2016

Department of Computer Science,
University of Kentucky
Supervisor: Dr. Jim Griffioen

- Implement and test an SDN application that allows the users through WebUI or RESTful APIs to establish, destroy and manage high-speed links in the campus network of University of Kentucky.

Publications

1. **Xin Li**, Minmei Wang, Shouqian Shi, Chen Qian "Towards Verifiable IoT Data Management" *In Proc. of ACM/IEEE IoTDI*, 2019.
2. **Xin Li**, Minmei Wang, Huazhe Wang, Ye Yu, Chen Qian "Towards Secure and Efficient Communication for the Internet of Things" *IEEE/ACM Transactions on Networking*.
3. Minmei Wang, **Xin Li**, Shouqian Shi, Chen Qian "Collaborative Validation of Public-Key Certificates for IoT by Distributed Caching" *In Proc. of IEEE INFOCOM*, 2019.
4. Jinsong Han, Chen Qian, Yuqin Yang, Ge Wang, Han Ding, **Xin Li**, Kui Ren "Butterfly: Environment-Independent Physical-Layer Authentication for Passive RFID" *In Proc. of ACM Ubicom*, 2018.
5. Ge Wang, Haofan Cai, Chen Qian, Jinsong Han, **Xin Li**, Han Ding, Jizhong Zhao "Towards Replay-resilient RFID Authentication." *In Proc. of ACM MobiCom*, 2018.
6. Qingjun Chen, Shouqian Shi, **Xin Li**, Chen Qian, Sheng Zhong "Privacy-preserving Cross-domain Routing Optimization–A Cryptographic Approach." *IEEE Transactions on Dependable and Secure Computing*.
7. Ye Yu, **Xin Li**, Chen Qian "SDLB: A Scalable and Dynamic Software Load Balancer for Fog and Mobile Edge Computing." *In Proc. of ACM MECOMM*, 2017.

8. Yu Zhao, Huazhe Wang, **Xin Li**, Tingting Yu, Chen Qian "Pronto: Efficient Test Packet Generation for Dynamic Network Data Planes." *In Proc. of IEEE ICDCS*, 2017.

9. **Xin Li**, Huazhe Wang, Ye Yu, Chen Qian "An IoT Data Communication Framework for Authenticity and Integrity." *In Proc. of ACM/IEEE IoTDI*, 2017.

10. **Xin Li**, Huazhe Wang, Ye Yu, Chen Qian "Poster: An IoT Data Communication Framework for Authenticity and Integrity." *Poster of ISOC NDSS*, 2017.

11. Wei Xi, Jinsong Han, Fei Wang, **Xin Li**, Chen Qian "QUICK: Pursuing Qualified CSI for MU-MIMO Networks." *Poster of ACM HotMobile*, 2017.

12. **Xin Li**, Chen Qian "An NFV Orchestration Framework for Interference-free Policy Enforcement." *In Proc. of IEEE ICDCS*, 2016.

13. **Xin Li**, Chen Qian "A Survey of Network Function Placement." *In Proc. of IEEE CCNC*, 2016.

14. **Xin Li**, Chen Qian "Traffic and Failure Aware VM Placement for Multi-tenant IaaS Cloud." *In Proc. of IEEE/ACM IWQoS*, 2015.

15. **Xin Li**, Chen Qian "Low-Complexity Multi-Resource Packet Scheduling for Network Functions Virtualization." *In Proc. of IEEE INFOCOM*, 2015.

16. **Xin Li**, Chen Qian "The Virtual Network Function Placement Problem." *In Proc. of IEEE INFOCOM WKSHPS*, 2015.

17. Ye Yu, Chen Qian, **Xin Li** "Distributed Collaborative Monitoring in Software Defined Networks.", *In Proc. of ACM HotSDN*, 2014.

18. Yifan Zhang, Jun Huang, **Xin Li** "A Heuristic for Monitoring Tree Design", *In Proc. of MIC*, 2012.

19. Yue Zhang, **Xin Li**, Xianli Zhou "A Reconfigurable Snake Robot Based on CAN-bus." *In Proc. of IEEE CSEE*, 2012.

20. **Xin Li**, Ye Yu, Wei Wang, Chen Qian "Scalable Software Defined Traffic Measurement by Distributed and Collaborative Monitoring." (submitted to IEEE JSAC)

21. **Xin Li**, Chen Qian "An NFV Orchestration Framework for Interference-free Policy Enforcement" (submitted to IEEE TSC)

22. Huazhe Wang, **Xin Li**, Ye Yu, Chen Qian "Middlebox Outsourcing with Privacy" (submitted to a conference)

23. Junjie Xie, Chen Qian, Deke Guo, **Xin Li**, Shouqian Shi, Honghui Chen "Efficient Routing Support for Data Placement and Retrieval Services in Edge Computing" (submitted to a conference)

24. Ge Wang, Haofan Cai, Chen Qian, Jinsong Han, **Xin Li**, Han Ding, Jizhong Zhao "Generalized, Low-cost, and Accurate RFID Sensing to Combat Multipaths in Practical Environments" (submitted to a conference)

25. Shouqian Shi, Ye Yu, **Xin Li**, Chen Qian "Concurry: Fast and Scalable Software Load Balancer" (submitted to a conference)

Awards

Student Travel Grant, IEEE ICNP'17	2017 - 2018
Dissertation-year Fellowship, UCSC	2017 - 2018

Student Travel Grant, IEEE S&P'17 2017 - 2018

Student Travel Grant, CPSWeek'17 2016 - 2017

Student Travel Grant, ACM SOSR'17 2016 - 2017

Student Travel Grant, IEEE ICDCS'16 2015 - 2016

Student Travel Grant, IEEE INFOCOM'15 2014 - 2015

Dean's Distinguish Fellowship, UCR 2012 - 2013

Excellent Graduate Essay, UESTC 2011 - 2012

MediaTek Scholarship, UESTC 2010 - 2011
- Awarded to students among top 5%

National Scholarship, UESTC 2009 - 2010
- Awarded to students among top 3%

Teaching Experience

Teaching Assistant Fall 2016 - Fall 2017

Department of Computer Engineering,
University of California Santa Cruz

- S2018 CMPE259 - Sensor Networks and Internet of Things
- F2017 CMPE252A - Computer Networks
- S2017 CMPE253 - Network Security
- F2016 CMPE110 - Computer Architecture

Teaching Assistant Fall 2013 - Fall 2015

Department of Computer Science,
University of Kentucky

- F2013 CS216 - Introduction to Software Engineering
- S2014 CS216 - Introduction to Software Engineering
- F2014 CS216 - Introduction to Software Engineering
- F2015 CS216 - Introduction to Software Engineering

Program Committee

- IEEE ICPADS 2018

Reviewer

Journal
- ACM Transactions on Sensor Networks
- IEEE Transactions on Cloud Computing
- IEEE Transactions on Industrial Informatics
- IEEE Transactions on Dependable and Secure Computing
- IEEE Transactions on Service Computing
- Computer Networks
- International Journal of Distributed Sensor Networks

Conference
- IEEE TrustCom 2016
- IEEE CCNC 2016
- IEEE GI 2016
- ACM SDNNFVSEC 2016
- IEEE SDS 2016
- IEEE ICNP CoolSDN 2015
- IEEE ICCCN 2015

SKILLS

- Computer Languages: C/C++, Java, Python, Bash, SQL, HTML
- Networking: NS3, Click/ClickOS, Openstack, OpenFlow, Openvswitch, Mininet, Opendaylight, Floodlight, BPF
- Security&Privacy: OpenSSL, CrytoTool
- Framwork: Openstack, Docker, Hadoop, Netty, Thrift, Flask, CPLEX, OpenTracing
- Mathematics: Cryptography, Optimization, Numerical Analysis, Machine Learning, Stochastic Process, Linear Algebra