

Yuanjie Li

Contact

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Computer Science
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Interests

Next-generation wireless and mobile networking (5G and beyond), mobile network analytics, mobile edge computing, Internet-of-Things (IoT), network security

Education

- 2012–2017 **Ph.D. in Computer Science** University of California, Los Angeles
Advisor: Songwu Lu
Dissertation: *Augmenting Intelligence in Mobile Networked System*
(UCLA Dissertation Year Fellowship, 2016)
(Cisco Outstanding Graduate Student Research Award in UCLA, 2018)
- 2008-2012 **Bachelor of Engineering in Electronic Engineering** Tsinghua University
(Best Student Research Training Award, 2011)

Experience

- Since 2017 **MobiQ Technologies** Co-Founder
<http://www.mobiq-tech.com>
 - MobiQ is the first in-device, full-stack 4G/5G analytics and optimization software for IoT application vendors and mobile virtual network operators. Without the infrastructure or device hardware change, MobiQ enables the in-SIM visibility to the black-box mobile network operations, performs in-device optimizations using readily available mechanisms, and offers value-added cloud services for network-wide optimization and management via crowdsourcing.
 - MobiQ has been sponsored by the NSF I-Corps program (2017/11-2018/09), and is under the application of the NSF SIBR Phase-I grant.
- Since 2014 **MobileInsight** Project leader
<http://www.mobileinsight.net>
 - MobileInsight is the first open-source community tool that empowers fine-grained mobile network analytics inside your smartphones.
 - MobileInsight has been used by 300+ universities (Stanford, Berkeley, UIUC, Georgia Tech, etc.) and companies (Microsoft, Huawei, AT&T, etc.).
 - Collaboration with Purdue University, Peking University, and SJTU
 - Empower 3rd-party research at top venues like MobiCom'19/18/17, Mobisys 17, TMC 17, SIGMETRICS 18, NDSS 18, CoNext 18 etc.
- 2014 07–09 **Google Inc.** Software Engineering Internship.
Youtube video optimization in LTE networks.
- 2013 07–09 **Cisco Systems** Research Internship.
Multi-path congestion control in information-centric networking.
- 2010-2012 **Tsinghua University** Research Assistant.
Efficient and scalable multicast in data center networking.

Honors and Awards

- Cisco Outstanding Graduate Student Research Award in UCLA, 2018
- ACM MobiCom'17 Best Community Paper Award, 2017
- ACM MobiCom'16 Best Community Paper Award, 2016
- UCLA Dissertation Year Fellowship, UCLA, 2016
- Chinese Government Award for Outstanding Oversea Graduate Student, 2016
- Finalist Award for Qualcomm Innovation Fellowship (QINF), 2015
- The Best Student Research Training Award, Tsinghua University, 2011
- Qianheng Huang Scholarship, Tsinghua University, 2011
- Travel Grants: USENIX NSDI 2016, ACM HotWireless 2016

Professional Service

- **ACM MobiCom 2018 Social Media Chair**
- **Conference reviewer:** ACM MobiCom'18 (external), ACM SIGCOMM'18 Workshop on AR/VR, ACM UbiComp 2018, ACM MobiHoc'18 Workshop on IoT SSP, IEEE INFOCOM 2017, IEEE PAC 2017, ACM MobiCom'17 (external), IEEE CNS'17, ACM WinTech'17, ACM CarSys 2016, ACM MobiCom'16 (external), IEEE ICC 2012
- **Journal reviewer:** IEEE/ACM Transactions on Networking (ToN), IEEE Transactions on Mobile Computing (TMC), IEEE Transactions on Dependable and Secure Computing (TDSC), IEEE Transactions on Computers (TC), IEEE Network Magazine
- **Member of UCLA Graduate Admission Review Committee, 2016--2017**

Media Report

- *The Tick Programmable Low-Latency SDR System*, MobiCom'17: Research Highlight at ACM GetMobile, March 2018
- *MobileInsight: Analyzing Cellular Network Information on Smartphones*, MobiCom'16: Research Highlight at ACM GetMobile, March 2017
- *Insecurity of Voice Solution VoLTE in LTE Mobile Networks*, CCS'15: TheVerge'15, RCSWirelessNews'15, Techxina'15, NewsUnited'15.

Publications

1. Jing Wang, Yufan Zheng, Yunzhe Ni, Chenren Xu, Feng Qian, Wangyang Li, Wantong Jiang, Yihua Cheng, Zhuo Cheng, **Yuanjie Li**, Xiufeng Xie, Yi Sun, Zhongfeng Wang, "An Active-Passive Measurement Study of TCP Performance over LTE on High-speed Rails", to appear at **ACM MobiCom'19**
2. **Yuanjie Li**, Chunyi Peng, Haotian Deng, Zengwen Yuan, Guan-Hua Tu, Jiayao Li, Songwu Lu, Xi Li, "Device-Customized Multi-Carrier Network Access on Commodity Smartphones", to appear at **IEEE/ACM Transactions on Networking (ToN)**, 2018
3. Zhaowei Tan, **Yuanjie Li**, Qianru Li, Zhehui Zhang, Songwu Lu, "Supporting Mobile VR in LTE Networks: How Close Are We?", **ACM SIGMETRICS'18** (Acceptance rate: $54/270 = 20\%$)
4. Zengwen Yuan, Qianru Li, **Yuanjie Li**, Chunyi Peng, Songwu Lu, George Varghese, "Resolving Policy Conflicts in Multi-carrier Access", **ACM MobiCom'18** (Acceptance rate: $42/187 = 22.2\%$)

5. Zengwen Yuan, **Yuanjie Li**, Chunyi Peng, Songwu Lu, Haotian Deng, Zhaowei Tan, Taqi Raza, "A Machine Learning Based Approach to Mobile Network Analysis", **IEEE ICCCN'18** (Invited paper)
6. Haoyang Wu, Tao Wang, Zengwen Yuan, Chunyi Peng, Zhiwei Li, Zhaowei Tan, Boyan Ding, Xiaoguang Li, **Yuanjie Li**, Jun Liu, Songwu Lu, "The Tick Programmable Low-Latency SDR System", **ACM GetMobile 2018**
7. **Yuanjie Li**, Zengwen Yuan, Chunyi Peng, "A Control-Plane Perspective on Reducing Data Access Latency in LTE Networks", **ACM MobiCom 2017** (Acceptance rate: 35/186 = 18.8%)
8. Haoyang Wu, Tao Wang, Zengwen Yuan, Chunyi Peng, Zhiwei Li, Zhaowei Tan, Boyan Ding, Xiaoguang Li, **Yuanjie Li**, Jun Liu, Songwu Lu, "The Tick Programmable Low-Latency SDR System", **ACM MobiCom 2017** (Acceptance rate: 35/186 = 18.8%)
Best Community Paper Award
9. **Yuanjie Li**, Chunyi Peng, Zengwen Yuan, Jiayao Li, Haotian Deng, Tao Wang, "MobileInsight: Analyzing Cellular Network Information on Smartphones", **ACM GetMobile 2017**, Volume 21 Issue 1, March 2017
10. Haotian Deng, Qianru Li, **Yuanjie Li**, Songwu Lu, Chunyi Peng, Taqi Raza, Zhaowei Tan, Zengwen Yuan, Zhehui Zhang, "Towards automated intelligence in 5G systems", **IEEE ICCCN 2017** (Invited paper, authors in alphabetical order)
11. Wenguang Huang, Chang Zhou, **Yuanjie Li**, Songwu Lu, Luoyi Fu, "cniCloud: Querying the Cellular Network Information at Scale", **ACM WinTECH 2017**
12. **Yuanjie Li**, Chunyi Peng, Zengwen Yuan, Jiayao Li, Haotian Deng, Tao Wang, "MobileInsight: Extracting and Analyzing Cellular Network Information on Smartphones", **ACM MobiCom 2016** (Acceptance rate: 31/247 = 12.6%)
Best Community Paper Award
13. **Yuanjie Li**, Haotian Deng, Chunyi Peng, Guan-Hua Tu, Jiayao Li, Zengwen Yuan, Songwu Lu, "iCellular: Device-Customized Cellular Network Access on Commodity Smartphones", **USENIX NDSI 2016** (Acceptance rate: 45/228 = 19.7%)
14. **Yuanjie Li**, Haotian Deng, Jiayao Li, Chunyi Peng, Songwu Lu, "Instability in Distributed Mobility Management: Revisiting Configuration Management in 3G/4G Mobile Networks", **ACM SIGMETRICS 2016** (Acceptance rate: 28/208 = 13.4%)
15. **Yuanjie Li**, Zengwen Yuan, Chunyi Peng, Songwu Lu, "CAP on Mobility Control for 4G LTE Networks", **ACM HotWireless'16** (Invited paper)
16. **Yuanjie Li**, Jiaqi Xu, Chunyi Peng, Songwu Lu, "A First Look at Unstable Mobility Management in Cellular Networks", **ACM HotMobile'16** (Acceptance rate: 18/55 = 32.7%)
17. Chunyi Peng, **Yuanjie Li**, Zhuoran Li, Jie Zhao, Jiaqi Xu, "Understanding and Diagnosing Real-World Femtocell Performance Problems", **IEEE INFOCOM 2016** (Acceptance rate: 300/1644 = 18.3%)
18. Guan-Hua Tu*, **Yuanjie Li*** (*: co-primary), Chunyi Peng, Chi-Yu Li, Hongyi Wang, Songwu Lu, "Detecting Problematic Control-Plane Protocol Interactions in Mobile Networks", **IEEE/ACM Transactions on Networking, 2016**
19. Guan-Hua Tu, Chi-Yu Li, Chunyi Peng, Zengwen Yuan, **Yuanjie Li**, Songwu Lu, "VoLTE*: A Lightweight Voice Solution to 4G LTE Networks", **ACM HotMobile'16** (Acceptance rate: 18/55 = 32.7%)
20. Guan-Hua Tu, Chi-Yu Li, Chunyi Peng, **Yuanjie Li**, Songwu Lu, "New Security Threats Caused by IMS-based SMS Service in 4G LTE Networks", **ACM CCS 2016** (Acceptance rate: 137/837=16.3%)

21. Chunyi Peng, **Yuanjie Li**, “Demystify Undesired Handoff in Cellular Networks”, **IEEE ICCCN 2016** (Acceptance rate: 88/352 = 25.0%)
22. Chi-Yu Li, Guan-Hua Tu, Chunyi Peng, Zengwen Yuan, **Yuanjie Li**, Songwu Lu, Xinbing Wang, “Insecurity of Voice Solution VoLTE in LTE Mobile Networks”, **ACM CCS 2015** (Acceptance rate: 128/646 = 19.8%)
23. Guan-Hua Tu*, **Yuanjie Li*** (*: **co-primary**), Chunyi Peng, Chi-Yu Li, Hongyi Wang, Songwu Lu, “Control-Plane Protocol Interactions in Cellular Networks”, **ACM SIGCOMM 2014** (Acceptance rate: 45/237 = 18.9%)
24. Yu-Ting Yu, **Yuanjie Li**, Xingyu Ma, Wentao Shang, MY Sanadidi, Mario Gerla, “Scalable Opportunistic VANET Content Routing With Encounter Information”, **IEEE VCA’13**
25. Dan Li, **Yuanjie Li**, Jianping Wu, Sen Su, Jiangwei Yu, “ESM: Efficient and Scalable Data Center Multicast Routing”, **IEEE/ACM Transactions on Networking, 2013**
26. Xun-Wei Xu, **Yuanjie Li**, Yu-xi Liu, “Photon Induced Tunneling in Optomechanical Systems”, **Physical Review A, 2013**
27. Xun-Wei Xu, **Yuanjie Li**, “Antibunching Photons in a Cavity Coupled to an Optomechanical System”, **Journal of Physics B, 2013**

Invited Talks

1. *Data-Driven End Intelligence in the Mobile Networked Systems*
1st ACM MobiHoc Workshop on Mobile IoT Sensing/Security/Privacy, UCSB, HPE Labs, 2018
2. *Securing the Mobile Networked Systems: A Control/Data-Plane Perspective*
Stevens Institute of Technology, 2018
3. *Symbiotic Apps-Wireless Architecture via Named Data*
Intel-NSF Information-Centric Networking in Wireless Edge Networks Kickoff Meeting, 2017
4. *Augmenting Intelligence in Mobile Networked System*
USC, Rutgers University, University of Oregon, 2017
5. *A Control-Plane Perspective on Reducing Data Access Latency in Mobile Networks*
ACM MobiCom 2017
6. *cniCloud: Querying the Cellular Network Information at Scale*
ACM WinTECH 2017
7. *MobileInsight: Extracting and Analyzing Cellular Network Information on Smartphones*
ACM MobiCom 2016
8. *CAP on Mobility Control for Mobile Networks*
ACM HotWireless 2016
9. *iCellular: Device-Customized Cellular Network Access on Commodity Smartphones*
USENIX NSDI 2016
10. *The Dark Side of VoLTE: Security Vulnerabilities and Solutions*
Qualcomm Innovation Fellowship Finals, 2015
11. *Control-Plane Protocol Interactions in Cellular Networks*
ACM SIGCOMM 2014

Demos

- In-device, Runtime Cellular Network Information Extraction and Analysis

- ACM MobiCom'16, New York, USA, 2016
- 5th Workshop on All Things Cellular: Operations, Applications and Challenges (All Things Cellular), New York, USA, 2016

Teaching and Mentoring

- **Co-instructor** for CS 211: Network Protocol and Systems Software Design for Wireless and Mobile (online graduate course), UCLA, Spring 2015
- **Teaching assistant** for
 - CS 211: Network Protocol and Systems Software Design for Wireless and Mobile (graduate course), UCLA, Fall 2015
 - CS 118: Computer Network Fundamentals, UCLA, Fall 2014, Fall 2013
 - CS 31: Introduction to Computer Science, UCLA, Winter 2014
 - CS 33: Introduction to Computer Organization, UCLA, Spring 2014
- **Mentor** of 12 graduate, 2 undergraduate, and 2 high-school students (since 2014)

References (in alphabetical order)

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