

Feng Qian

fengqian@umn.edu

CONTACT

Address: 480 Digital Technology Center, 117 Pleasant St SE, Minneapolis MN 55455
Homepage: <http://fengqian.org>

EMPLOYMENT

- 08/2018 – Present: University of Minnesota – Twin Cities, Minneapolis MN
Assistant Professor, Department of Computer Science and Engineering
College of Science and Engineering
- 01/2015 – 7/2018: Indiana University, Bloomington IN
Assistant Professor, Department of Computer Science
School of Informatics, Computing, and Engineering
- 09/2012 – 12/2014 : AT&T Labs – Research, Florham Park NJ & Bedminster NJ
Researcher (Senior Member of Technical Staff)

EDUCATION

- 09/2009 – 06/2012: University of Michigan, Ann Arbor MI
Ph.D. Degree, CSE Division, Department of EECS
Advisor: Professor Z. Morley Mao
Thesis: Characterization and Optimization of Resource Utilization for Cellular Networks
Distinguished Ph.D. Dissertation Award – Honorable Mention (Top 1.5%).
- 09/2007 – 05/2009: University of Michigan, Ann Arbor MI
M.S. Degree, CSE Division, Department of EECS
GPA: 8.5 / 9.0 (8.0 = A, 9.0 = A+)
- 09/2003 – 07/2007: Shanghai Jiao Tong University, Shanghai China
B.S. Degree, ACM Honors Class, Department of Computer Science
GPA: 89 / 100 (3.8 / 4.3), Major GPA: 91 / 100 (3.96 / 4.3), **Ranked at Top 1 out of 180.**
Thesis: Electroencephalography Based Vigilance Analysis
Best undergraduate thesis (3 out of 180).

HONORS AND AWARDS

- 2018 Indiana University Trustees Teaching Award.
- 2018 NSF Faculty Early Career Development Program (CAREER) Award.
- 2016 Google Faculty Award.
- 2016 Best Paper Award, ACM CoNEXT 2016.
- 2016 NSF CISE Research Initiation Initiative (CRII) Award.
- 2014 Key Contributor Award (KCA) at AT&T Labs – Research.
- 2013 Winner of the smartphone application challenge at GSMA's 18th annual Global Mobile Awards
ARO: Mobile Application Resource Optimizer (collaborated with U of M)
- 2011 First Place in Engineering Graduate Symposium Technical Session, University of Michigan
(Software and Intelligent Systems Session)
Project: "ARO: Mobile Application Resource Optimizer"
- 2011 Winners of the FCC Open Internet App Challenge
In the categories of "Open Internet App Award" and "People's Choice App".

Project: "MobiPerf: Mobile Network Measurement System"
University of Michigan and Microsoft Research

2010 First Place in 7th Annual Graduate Student Honors Competition of CSE Department

2010 Rackham predoctoral fellowship nomination, University of Michigan

2009 Microsoft research fellowship nomination (two students in CSE Department)

2006 1st Class Prize in National Undergraduate Math Contest in Modeling (Shanghai Region)

2005 Excellent Academic Scholarship (1st Class)

2004 1st Class Prize in 1st Programming Contest, SJTU / Excellent Student in SJTU

2003 Chinese College entrance exam waived (0.05%)

2003 1st Class Prize in National Olympiad in Informatics (Jiangsu Province)

Student Travel Grant: Usenix Security 2008, IMC 2009, and Mobisys 2011

Best Paper Candidate: Mobisys 2012, PAM 2013, CoNEXT 2015

PUBLICATIONS (at Indiana University)

[S&P19] **Dangerous Skills: Understanding and Mitigating Security Risks of Voice-Controlled Third-Party Functions on Virtual Personal Assistant Systems**

Nan Zhang, Xianghang Mi, Xuan Feng, XiaoFeng Wang, Yuan Tian, and Feng Qian.

To Appear at IEEE Symposium on Security and Privacy 2019, San Francisco, CA.

[S&P19] **Resident Evil: Understanding Residential IP Proxy as a Dark Service**

Xianghang Mi, Xuan Feng, Xiaojing Liao, Baojun Liu, XiaoFeng Wang, Feng Qian, Zhou Li, Sumayah Alrwais, Limin Sun, and Ying Liu.

To Appear at IEEE Symposium on Security and Privacy 2019, San Francisco, CA.

[MobiCom18 Demo] **Demo: Tile-Based Viewport-Adaptive Panoramic Video Streaming on Smartphones**

Feng Qian, Bo Han, Qingyang Xiao, and Vijay Gopalakrishnan.

In Proceedings of ACM MobiCom 2018, New Delhi, India.

[MobiCom18] **Flare: Practical Viewport-Adaptive 360-Degree Video Streaming for Mobile Devices**

Feng Qian, Bo Han, Qingyang Xiao, and Vijay Gopalakrishnan.

In Proceedings of ACM MobiCom 2018, New Delhi, India.

[ToN18] **DBABP: Robust Rate Adaptation Algorithm for SVC Video Streaming**

Anis Elgabri, Vaneet Aggarwal, Shuai Hao, Feng Qian, and Subhabrata Sen.

In IEEE/ACM Transactions on Networking, 2018.

[HotMobile18] **CARS: Collaborative Augmented Reality for Socialization**

Wenxiao Zhang, Bo Han, Pan Hui, Vijay Gopalakrishnan, Eric Zavesky, and Feng Qian.

In Proceedings of ACM HotMobile 2018, Tempe, AZ.

[NDSS18] **Game of Missuggestions: Semantic Analysis of Search-Autocomplete Manipulations**

Peng Wang, Xianghang Mi, Xiaojing Liao, XiaoFeng Wang, Kan Yuan, Feng Qian, and Raheem Beyah.

In Proceedings of NDSS 2018, San Diego, CA.

[HotNets17] **360-Degree Innovations for Panoramic Video Streaming**

Xing Liu, Qingyang Xiao, Vijay Gopalakrishnan, Bo Han, Feng Qian, and Matteo Varvello.

In Proceedings of ACM HotNets 2017, Palo Alto, CA.

[IMC17] **An Empirical Characterization of IFTTT: Ecosystem, Usage, and Performance**

Xianghang Mi, Feng Qian, Ying Zhang, and Xiaofeng Wang.

In Proceedings of ACM IMC 2017, London, UK.

[ICNP17] **Selective HTTPS Traffic Manipulation at Middleboxes for BYOD Devices**

Xing Liu, Feng Qian, and Zhiyun Qian.

In Proceedings of IEEE ICNP 2017, Toronto, Canada.

[MobiCom17 Demo] DEMS: DEcoupled Multipath Scheduler for Accelerating Multipath Transport

Yihua Guo, Ashkan Nikravesh, Z. Morley Mao, Feng Qian, and Subhabrata Sen.

In Proceedings of ACM MobiCom 2017 (Demo Session), Snowbird, UT.

[MobiCom17] Accelerating Multipath Transport Through Balanced Subflow Completion

Yihua Guo, Ashkan Nikravesh, Z. Morley Mao, Feng Qian, and Subhabrata Sen.

In Proceedings of ACM MobiCom 2017, Snowbird, UT.

[WearSys17] Rethink Phone-Wearable Collaboration From the Networking Perspective

Xing Liu, Yunsheng Yao, and Feng Qian.

In Proceedings of ACM WearSys 2017, Niagara Falls, NY.

[MobiSys17 Poster] Improve Push Notification on Smartwatches

Xing Liu, Yunsheng Yao, and Feng Qian.

In Proceedings of ACM MobiSys 2017 (Poster Session), Niagara Falls, NY.

[MobiSys17] Characterizing Smartwatch Usage in The Wild

Xing Liu, Tianyu Chen, Feng Qian, Zhixiu Guo, Felix Xiaozhu Lin, Xiaofeng Wang, and Kai Chen.

In Proceedings of ACM MobiSys 2017, Niagara Falls, NY.

[S&P 17] Under the Shadow of Sunshine: Understanding and Detecting BulletProof Hosting on Legitimate Service Provider Networks

Sumayah Alrwais, Xiaojing Liao, Xianghang Mi, Peng Wang, Xiaofeng Wang, Feng Qian, Raheem Beyah, and Damon McCoy.

In Proceedings of IEEE Symposium on Security and Privacy 2017, San Jose, CA.

[WWW17] Push or Request: An Investigation of HTTP/2 Server Push for Improving Mobile Web Performance

Sanae Rosen, Bo Han, Shuai Hao, Z. Morley Mao, and Feng Qian.

In Proceedings of WWW 2017, Perth, Australia.

[InfoCom17] A Control Theoretic Approach to ABR Video Streaming: A Fresh Look at PID-based Rate Adaptation

Yanyuan Qin, Ruofan Jin, Krishna Pattipati, Feng Qian, Bing Wang, and Chaoqun Yue.

In Proceedings of IEEE INFOCOM 2017, Atlanta, GA.

[CoNEXT16] SMig: Stream Migration Extension For HTTP/2

Xianghang Mi, Feng Qian, and Xiaofeng Wang.

In Proceedings of ACM CoNEXT 2016, Irvine, CA.

[CoNEXT16] MPDASH: Adaptive Video Streaming Over Preference-Aware Multipath

Bo Han, Feng Qian, Lusheng Ji, and Vijay Gopalakrishnan.

In Proceedings of ACM CoNEXT 2016, Irvine, CA.

Best Paper Award

[IMC16] Understanding On-device Bufferbloat for Cellular Upload

Yihua Guo, Feng Qian, Qi Alfred Chen, Z. Morley Mao, and Subhabrata Sen.

In Proceedings of ACM IMC 2016, Santa Monica, CA.

[AllThingsCellular16] Optimizing 360 Video Delivery Over Cellular Networks

Feng Qian, Bo Han, Lusheng Ji, and Vijay Gopalakrishnan.

In Proceedings of All Things Cellular 2016 Workshop, New York, NY (co-located with MobiCom).

[AllThingsCellular16] When Should We Surf the Mobile Web Using Both WiFi and Cellular?

Bo Han, Feng Qian, and Lusheng Ji.

In Proceedings of All Things Cellular 2016 Workshop, New York, NY (co-located with MobiCom).

[MobiCom16 Poster] Measuring and Optimizing Android Smartwatch Energy Consumption

Xing Liu and Feng Qian.

In Proceedings of ACM MobiCom 2016 (Poster Session), New York, NY.

MobiCom Student Research Competition – 3rd Place

[MobiCom16] An In-depth Understanding of Multipath TCP on Mobile Devices: Measurement and System Design

Ashkan Nikraves, Yihua Guo, Feng Qian, Z. Morley Mao, and Subhabrata Sen.

In Proceedings of ACM MobiCom 2016, New York, NY.

[CoNEXT15] TM³: Flexible Transport-layer Multi-pipe Multiplexing Middlebox Without Head-of-line Blocking

Feng Qian, Vijay Gopalakrishnan, Emir Halepovic, Subhabrata Sen, and Oliver Spatscheck.

In Proceedings of ACM CoNEXT 2015, Heidelberg, Germany.

[CoNEXT15] An Anatomy of Mobile Web Performance over Multipath TCP

Bo Han, Feng Qian, Shuai Hao, and Lusheng Ji.

In Proceedings of ACM CoNEXT 2015, Heidelberg, Germany.

Best Paper Candidate

[IEEE Int. Comp.] Toward Mobile-friendly Web Browsing (Invited Article)

Feng Qian.

In IEEE Internet Computing, Volume 19, Issue 5, 2015.

[IMC15] Revisiting Network Energy Efficiency of Mobile Apps: Performance in the Wild

Sanae Rosen, Ashkan Nikraves, Yihua Guo, Z. Morley Mao, Feng Qian, and Subhabrata Sen.

In Proceedings of ACM Internet Measurement Conference (IMC) 2015, Tokyo, Japan.

[AllThingsCellular15] MetaPush: Cellular-Friendly Server Push For HTTP/2

Bo Han, Shuai Hao, and Feng Qian (Equal Contribution)

In Proceedings of All Things Cellular 2015, London, UK (co-located with SIGCOMM).

[ANCS15] High-Speed and Memory-Efficient Forwarding Engine for Future Internet Architecture

Mehrdad Moradi, Feng Qian, Qiang Xu, Z. Morley Mao, Darrell Bethea, and Michael Reiter

In Proceedings of ACM/IEEE ANCS 2015, Oakland, CA (co-located with NSDI).

PUBLICATIONS (before joining IU)**[HotMobile15] Human Assisted Positioning Using Textual Signs**

Bo Han, Feng Qian, and Moo-Ryong Ra. (Equal Contribution)

In Proceedings of ACM HotMobile 2015, Santa Fe, NM.

[MobiSys14] Characterizing Resource Usage for Mobile Web Browsing

Feng Qian, Subhabrata Sen, and Oliver Spatscheck.

In Proceedings of ACM Mobisys 2014, Bretton Woods, NH.

[PAM14] RadioProphet: Intelligent Radio Resource Deallocation for Cellular Networks

Junxian Huang, Feng Qian, Z. Morley Mao, Subhabrata Sen, and Oliver Spatscheck.

In Proceedings of Passive and Active Measurement Conference (PAM) 2014, Los Angeles, CA.

[CoNEXT13] Silent TCP Connection Closure for Cellular Networks

Feng Qian, Subhabrata Sen, and Oliver Spatscheck.

In Proceedings of ACM CoNEXT 2013, Santa Barbara, CA.

[SIGCOMM13] An In-depth Study of LTE: Effect of Network Protocol and Application Behavior on Performance

Junxian Huang, Feng Qian, Yihua Guo, Yuanyuan Zhou, Qiang Xu, Z. Morley Mao, Subhabrata Sen, and Oliver Spatscheck.

In Proceedings of ACM SIGCOMM 2013, Hong Kong, China.

[PAM13] How to Reduce Smartphone Traffic Volume by 30%?

Feng Qian, Junxian Huang, Jeffrey Erman, Z. Morley Mao, Subhabrata Sen, and Oliver Spatscheck.
In Proceedings of Passive and Active Measurement Conference (PAM) 2013, Hong Kong, China.
Best Paper Candidate

[IMC12] Screen-Off Traffic Characterization and Optimization in 3G/4G Networks

Junxian Huang, Feng Qian, Z. Morley Mao, Subhabrata Sen, and Oliver Spatscheck.
In Proceedings of ACM Internet Measurement Conference (IMC) 2012, Boston, Massachusetts.

[Ph.D. Thesis] Characterization and Optimization of Resource Utilization For Cellular Networks

Feng Qian. Ph.D. thesis, University of Michigan, May 2012.
Distinguished Ph.D. Dissertation Award - Honorable Mention

[MobiSys12] Web Caching on Smartphones: Ideal vs. Reality

Feng Qian, Kee Shen Quah, Junxian Huang, Jeffrey Erman, Alexandre Gerber, Z. Morley Mao, Subhabrata Sen, and Oliver Spatscheck.
In Proceedings of ACM Mobisys 2012, Low Wood Bay, Lake District, United Kingdom.
Best Paper Candidate

[MobiSys12] A Close Examination of Performance and Power Characteristics of 4G LTE Networks

Junxian Huang, Feng Qian, Alexandre Gerber, Z. Morley Mao, Subhabrata Sen, and Oliver Spatscheck.
In Proceedings of ACM Mobisys 2012, Low Wood Bay, Lake District, United Kingdom.

[WWW12] Periodic Transfers in Mobile Applications: Network-wide Origin, Impact, and Optimization

Feng Qian, Zhaoguang Wang, Yudong Gao, Junxian Huang, Alexandre Gerber, Z. Morley Mao, Subhabrata Sen, and Oliver Spatscheck.
In Proceedings of WWW 2012, Lyon France.

[MobiSys11] Profiling Resource Usage for Mobile Applications: a Cross-layer Approach

Feng Qian, Zhaoguang Wang, Alexandre Gerber, Z. Morley Mao, Subhabrata Sen, and Oliver Spatscheck.
In Proceedings of ACM Mobisys 2011, Washington, DC.

[MobiSys11 Demo] Demo: Mobile Application Resource Optimizer (ARO) (System Demo)

Feng Qian, Zhaoguang Wang, Alexandre Gerber, Z. Morley Mao, Subhabrata Sen, and Oliver Spatscheck.
In Proceedings of ACM Mobisys 2011 (Demo Session), Washington, DC.

[SIGMETRICS11] Cellular Data Network Infrastructure Characterization and Implication on Mobile Content Placement

Qiang Xu, Junxian Huang, Zhaoguang Wang, Feng Qian, Alexandre Gerber, and Z. Morley Mao.
In Proceedings of ACM SIGMETRICS 2011, San Jose, CA.

[ICNP10] TOP: Tail Optimization Protocol for Cellular Radio Resource Allocation

Feng Qian, Zhaoguang Wang, Alexandre Gerber, Z. Morley Mao, Subhabrata Sen, and Oliver Spatscheck.
In Proceedings of IEEE ICNP 2010, Kyoto Japan.

[IMC10] Characterizing Radio Resource Allocation for 3G Networks

Feng Qian, Zhaoguang Wang, Alexandre Gerber, Z. Morley Mao, Subhabrata Sen, and Oliver Spatscheck.
In Proceedings of ACM Internet Measurement Conference (IMC) 2010, Melbourne, Australia.

[IMC09] TCP Revisited: A Fresh Look at TCP in the Wild

Feng Qian, Alexandre Gerber, Z. Morley Mao, Subhabrata Sen, Oliver Spatscheck, and Walter Willinger.
In Proceedings of ACM Internet Measurement Conference (IMC) 2009, Chicago, IL.

[SIGMETRICS10] A Case for Unsupervised-Learning-based Spam Filtering (Extended Abstract)

Feng Qian, Abhinav Pathak, Y. Charlie Hu, Z. Morley Mao, and Yinglian Xie.
In Proceedings of SIGMETRICS 2010, New York City, NY.

[SecureComm09] Ensemble: Community-based Anomaly Detection for Popular Applications

Feng Qian, Zhiyun Qian, Z. Morley Mao, and Atul Prakash.

In Proceedings of SecureComm 2009, Athens Greece. (Poster in USENIX Security 2008.)

[SIGMETRICS09] Botnet Spam Campaigns can be Long Lasting: Evidence, Implications, and Analysis

Abhinav Pathak, Feng Qian, Y. Charlie Hu, Z. Morley Mao, and Supranamaya Ranjan.

In Proceedings of SIGMETRICS 2009, Seattle WA.

[Textbook] Algorithms (Commented version in Chinese). ISBN 9787111253617

Feng Qian and Hengming Zou. Published by China Machine Press, 2009.

INTERNSHIP EXPERIENCE

Intern at AT&T Labs Research, Florham Park NJ (Summer 2008, 2009, 2010, and 2011)

Related work: Network measurement, traffic analysis, and mobile systems.

Intern at Software Solution Group, Intel Corporation, Shanghai China (Summer 2006)

TEACHING EXPERIENCE

Spring 2018: CSCI-B 649 Mobile Computing.

Fall 2017: CSCI-P 438 Introduction to Computer Networks.

Spring 2017: CSCI-B 649 Mobile Computing.

Fall 2016: CSCI-P 538 Computer Networks.

Fall 2016: CSCI-P 438 Introduction to Computer Networks.

Fall 2015: CSCI-P 438 Introduction to Computer Networks.

Spring 2015: CSCI-B 649 Mobile Computing.

Fall 2009: EECS 203 Discrete Math, University of Michigan (as a graduate student instructor).

Fall 2006: CS 371 Course Project of Operating System, SJTU (as a teaching assistant).

MENTORED STUDENTS

Justus Schriedel (Undergraduate student, Indiana University, since Summer 2017)

Yunsheng Yao (Ph.D. student, Indiana University, since Spring 2017)

Qingyang Xiao (Ph.D. student, Indiana University, since Fall 2016)

Tianyu Chen (Ph.D. student, Indiana University, since Fall 2016)

Xing Liu (Ph.D. student, Indiana University, since Fall 2015)

Xianghang Mi (Ph.D. student, Indiana University, since Fall 2015)

Yihua Guo (Summer Intern from University of Michigan, 2014)

Yuanyuan Zhou (Summer Intern from University of Michigan, 2013)

PROFESSIONAL SERVICES

Journal and Conference Reviewer: IEEE Transactions on Mobile Computing (TMC), IEEE/ACM Transactions on Networking (TNET), SIGCOMM Computer Communication Review (CCR), IEEE Transactions on Parallel and Distributed Systems (TPDS), IEEE Transactions on Dependable and Secure Computing (TDSC), ACM Transactions on Embedded Computing (TECS), IEEE Transactions on Cloud Computing (TCC), IEEE Transactions on Wireless Communications (TWC), IEEE Transactions on Vehicular Technology (TVT), IEEE Transactions on Emerging Topics in Computing, IEEE Communications Letters (CL), IEEE Internet Computing Magazine, IEEE Pervasive Computing, IEEE Computer Architecture Letters, ACM Transactions on Internet Technology (TOIT), Elsevier Pervasive and Mobile Computing (PMC), Elsevier COMNET, Elsevier COMCOM, Elsevier AD-HOC, Springer Computing, John Wiley & Sons IJCS, Wiley ETT, Elsevier Journal of Systems Architecture (JSA), Security and Communication Networks (SCN), Science China Information Sciences (SCIS), ACM UbiComp, IEEE Infocom, IEEE ICC, IEEE COMSNETS

Conference and Workshop Program Committee: IEEE InfoCom 2019, IEEE ICNP 2018, ACM SIGCOMM 2018 Workshop on VR/AR, WWW 2018, IEEE InfoCom 2018, ACM MobiCom 2017 (travel grant co-chair), IEEE ICNP 2017, IEEE Performance and Fault Management in Cellular Networks (collocated with Infocom 2017), IEEE SECON 2017, IEEE ICDCS 2017, The 2017 Workshop on Data Analytics for Mobile Networking, IEEE Infocom 2017, IEEE ICNP 2016, ICCCN 2016, BIGCOM

2016, IEEE PIMRC 2016, ACM MobiCom 2016 (light), ACM AisaCCS 2016, IEEE Infocom 2016, IoT-App 2015, HotPower 2015, SecureComm 2015, IEEE PIMRC 2015, IEEE SECON 2015, ACM Mobisys 2014, All Things Cellular 2014 (collocated with ACM SIGCOMM 2014), ACM SIGCOMM 2014 Poster & Demo, IEEE PIMRC 2014.

PATENTS

Intelligent mobility application profiling with respect to identified communication bursts.
US Patent No. 8,527,627.

Method and apparatus for inferring state transitions in a wireless communications network.
US Patent No. 8,570,926.

TCP flow clock extraction. US Patent No. 8,576,968.

Method and apparatus for performing a demotion in a cellular communications network.
US Patent No. 8,606,290.

Method and apparatus for providing a dynamic inactivity timer in a wireless communications network. US Patent No. 8,611,825.

Tail optimization protocol for cellular radio resource allocation. US Patent No. 8,744,367.

Inferring TCP initial congestion window. US Patent No. 8,750,109 and 8,274,886.

Detecting irregular retransmissions. US Patent No. 8,817,653.

Method and apparatus for normalizing cellular communications network data.
US Patent No. 8,948,043.

Method and apparatus for characterizing infrastructure of a cellular network. US Patent No. 8,948,048.

Methods, devices, and computer program products for providing a computing application rating.
US Patent No. 9,003,017.

Bundling data transfers and employing tail optimization protocol to manage cellular radio resource utilization. US Patent No. 9,220,066.

Controlling traffic transmissions to manage cellular radio resource utilization. US Patent No. 9,264,872.

Intelligent mobility application profiling tool. US Patent No. 8,972,572.