Feng Qian

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CONTACT

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WORK AND EDUCATION

01/2015 – Present: Indiana University, Bloomington IN
Assistant Professor, Department of Computer Science, School of Informatics & Computing

09/2012 – 12/2014 : AT&T Labs – Research, Florham Park NJ & Bedminster NJ
Researcher (Senior Member of Technical Staff)

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

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 in CS Dept. (including 25 students of the ACM Class)
Thesis: Electroencephalography Based Vigilance Analysis

HONORS AND AWARDS

2016 Best Paper Award, ACM CoNEXT 2016.

2016 3rd Place, ACM MobiCom Student Research Competition (Student Xing Liu).

2014 2013 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)

2013 Honorable mention in the 2012 Distinguished Ph.D. Dissertation Award competition
Top 1.5% of all 750 dissertations produced at the University of Michigan in 2012

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)

2007 Best Undergraduate Thesis, CS Department, SJTU (3 winners out of 180 contestants)

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

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

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.
To Appear in Proceedings of WWW 2017, Perth, Australia.

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.
To Appear in Proceedings of IEEE INFOCOM 2017, Atlanta, GA.

SMig: Stream Migration Extension For HTTP/2
Xianghang Mi, Feng Qian, and Xiaofeng Wang.
In Proceedings of ACM CoNEXT 2016, Irvine, CA.

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)

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.

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).

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).

Measuring and Optimizing Android Smartwatch Energy Consumption
Xing Liu and Feng Qian.
In Proceedings of ACM MobiCom 2016 (Poster Session), New York, NY.
(3rd Place in the MobiCom Student Research Competition)

An In-depth Understanding of Multipath TCP on Mobile Devices: Measurement and System Design
Ashkan Nikravesh, Yihua Guo, Feng Qian, Z. Morley Mao, and Subhabrata Sen.
In Proceedings of ACM MobiCom 2016, New York, NY.

TM^3: 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.

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)

Toward Mobile-friendly Web Browsing (Invited Article)
Feng Qian.
In IEEE Internet Computing, Volume 19, Issue 5, 2015.

Revisiting Network Energy Efficiency of Mobile Apps: Performance in the Wild
Sanae Rosen, Ashkan Nikravesh, Yihua Guo, Z. Morley Mao, Feng Qian, and Subhabrata Sen.
In Proceedings of ACM Internet Measurement Conference (IMC) 2015, Tokyo, Japan.

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).

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).

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.

Characterizing Resource Usage for Mobile Web Browsing
Feng Qian, Subhabrata Sen, and Oliver Spatscheck.
In Proceedings of ACM Mobisys 2014, Bretton Woods, NH.

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.

Silent TCP Connection Closure for Cellular Networks
Feng Qian, Subhabrata Sen, and Oliver Spatscheck.
In Proceedings of ACM CoNEXT 2013, Santa Barbara, CA.

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.

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)

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.

Characterization and Optimization of Resource Utilization For Cellular Networks
Feng Qian. Ph.D. thesis, University of Michigan, May 2012.

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)

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.)

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.

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

MENTORED STUDENTS

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 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, ACM Transactions on Internet Technology (TOIT), Elsevier COMNET, Elsevier COMCOM, Elsevier ADHOC, 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 ICDCS 2017, The 2017 Workshop on Data Analytics for Mobile Networking, IEEE Infocom 2017, IEEE ICNP 2016, ICCCN 2016, BIGCOM 2016, IEEE PIMRC 2016, Mobicom 2016 (light), 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 SIGCOMM 2014), SIGCOMM 2014 Poster & Demo, IEEE PIMRC 2014.

PATENTS

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

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.

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

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

Method and apparatus for normalizing cellular communications network data.

US Patent No. 8,948,043.

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

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.

DEVELOPED SOFTWARE (SELECTED)

ARO (Mobile Application Resource Optimizer) [Mobisys 11]
A profiling tool that accurately exposes the cross-layer interaction to enable the discovery of inefficient resource usage for mobile applications. It has been productized by AT&T and open sourced.

TM^3 (Multi-pipe Multiplexing Middlebox) [CoNEXT 15]
A transport-layer proxy that strategically leverages multiplexing to boost TCP performance.

UbiDump [Mobisys 14]
A network traffic analysis tool that can collect and parse TCP/IP, SSL/TLS, and HTTP/SPDY traffic without man-in-the-middle support.

SpamCampaignAssassin [Sigmetrics 10]
An anti-spam system leveraging spam campaign signatures to filter spam emails in an unsupervised manner.

SPERKE [Undergraduate Project for Computer Graphics]
3D implementation of the "Chromatron" game.