

Jia Wang

Fellow of IEEE

Lead Inventive Scientist

AT&T Labs – Research

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EDUCATION

1996 - 2001

Ph.D., Department of Computer Science, Cornell University, Ithaca, New York.

Major: Computer Science (Minor: Electrical Engineering)

Advisors: Dr. Robbert van Renesse, Dr. Balachander Krishnamurthy (AT&T), and Prof. Zygmunt Haas

Dissertation: Network-Aware Client Clustering and its Applications

1996 - 1999

M.S., Department of Computer Science, Cornell University, Ithaca, New York.

Advisor: Prof. Srinivasan Keshav

1994 - 1996

B.S., Department of Computer Science, State University of New York, Binghamton, New York.

1990 - 1993

Undergraduate study, Department of Mathematics, Nankai University, Tianjin, P. R. China.

RESEARCH EXPERTISE

Computer networks and networked systems, data analytics and machine learning

My research expertise lies in the area of design, measurement and management of computer networks and systems, performance analysis and optimization, machine learning/data science for computer networks. I have led projects expand across a wide range of networks and technologies including traditional IP networks, software defined networks, wireless/mobile networks, cloud, and social networks. Many research innovations have been deployed and used in AT&T production networks and services.

AWARDS AND HONORS

2018

AT&T Labs Vice President Award

2015

Fellow of IEEE

2015

WoC STEM Special Recognition Awards by Career Communication Group

2014

AT&T Intellectual Property Achievement Award for "exceptional performance in the area of intellectual property"

2014

AT&T Labs Vice President Award for "Service Quality Management Research Work"

2011

Best Paper Award for "Rapid Detection of Maintenance Induced Changes in Service Performance", ACM International Conference on emerging Networking EXperiments and Technologies (CONEXT) 2011

2006

Senior Member of IEEE

2004

Best Student Paper Award for "Data Streaming Algorithm for Efficient and Accurate Estimation of Flow Size Distribution", ACM SIGMETRICS-IFIP WG 7.3 Performance 2004

1996 - 1999

National Science Foundation (NSF) Graduate Fellowship

1996

Award for Outstanding Academic Achievement in Baccalaureate Studies, State University of New York (SUNY), Binghamton, NY

1995 - 1996

Barry M. Goldwater Scholarship in Mathematics, Science and

Engineering

WORK EXPERIENCES

2017 - present	Program manager, AT&T Labs University Collaboration Program, Bedminster, NJ.
2015 - present	Lead Inventive Scientist, Network and Service Quality Management Research, AT&T Labs - Research, Bedminster, NJ.
2013 - 2015	Principal Inventive Scientist, Network and Service Quality Management Research, AT&T Labs - Research, Bedminster, NJ.
2004 - 2013	Principal Member of Technical Staff-Research, Network Measurement and Engineering Research Department, Internet and Networking Systems Research Center, AT&T Labs - Research, Florham Park, NJ.
2001 - 2004	Senior Technical Staff Member, IP Network Management and Performance Department, Internet and Networking Systems Research Center, AT&T Labs - Research, Florham Park, NJ.

PUBLICATIONS PAPERS IN REFEREED CONFERENCES

(Non-student authors are listed in alphabetical order)

1. Enabling Premium Service for Streaming Video in Cellular Networks, Xing Xu, Ramesh Govindan, Ajay Mahimkar, N. K. Shankaranarayanan, Jia Wang, and Minlan Yu, to appear in *Proceedings of IFIP Networking*, 2020.
2. Towards Identifying Impacted Users in Cellular Services, Shobha Venkataraman and Jia Wang, *Proceedings of ACM SIGKDD*, 2019. (45/700 = 7%)
3. Predictive Analysis in Network Function Virtualization, Zhijing Li, Zihui Ge, Ajay Mahimkar, Jia Wang, Ben Zhao, Heather Zheng, Joanne Emmons, Laura Ogden, *Proceedings of ACM Internet Measurement Conference (IMC)*, 2018.
4. Assessing the Impact of Network Events with User Feedback, Shobha Venkataraman and Jia Wang, *Proceedings of ACM SIGCOMM Workshop on Network Meets AI & ML (NetAI)*, 2018.
5. Enhancing Response Generation by Chat Flow Identification, Ruirui Li, Jyun-Yu Jiang, Chelsea Ju, Cheryl Flynn, Wen-ling Hsu, Jia Wang, Wei Wang, and Tan Xu, *Proceedings of ACM KDD Workshop on Conversational AI and Its Applications*, 2018.
6. Monitoring Quality of Experience for Operational Cellular Networks Using Machine to Machine Traffic, Faraz Ahmed, Zihui Ge, Alex Liu, Jia Wang, and He Yan, *Proceedings of IEEE INFOCOM*, 2017. (292/1395=21%)
7. Demo: Towards Customer Trouble Tickets Resolution Automation in Large Cellular Networks, Ruirui Li, Xinxin Huang, Shuo Song, Jia Wang, and Wei Wang, *Proceedings of ACM MOBICOM*, 2016.
8. Libra, Impact Assessment of Cellular Load Balancing, Kanthi Nagaraj, Ajay Mahimkar, Zihui Ge, Aman Shaikh, Jia Wang, Kevin Mohr, and Mark Stockert, *Proceedings of IEEE INFOCOM*, 2016. (300/1644=18%)
9. Detecting and Localizing End-to-End Performance Degradation for Cellular Data Service, Faraz Ahmed, Jeffrey Erman, Zihui Ge, Alex Liu, Jia Wang, and He Yan, *Proceedings of IEEE INFOCOM*, 2016. (300/1644=18%)
10. Magus: Minimizing Cellular Service Disruption during Network Upgrades, Xing Xu, Ioannis Broustis, Zihui Ge, Ramesh Govindan, Ajay Mahimkar, N.K. Shankaranarayanan, and Jia Wang *Proceedings of ACM International Conference on emerging Networking Experiments and Technologies (CoNext)*, 2015.

(41/196=20.9%)

11. Detecting and Localizing End-to-End Performance Degradation for Cellular Data Services, Faraz Ahmed, Jeffrey Erman, Zihui Ge, Alex Liu, Jia Wang, He Yan, *Proceedings of ACM SIGMETRICS (extended abstract)*, 2015. (57/240=23.75%)
12. Crossroads: A Practical Data Sketching Solution for Mining Intersection of Streams, Zhenglin Yu, Zihui Ge, Ashwin Lall, Jia Wang, Jun Xu, and He Yan, *Proceedings of ACM Internet measurement Conference (IMC)*, 2014. (43/188=23%)
13. Understanding the Impact of Network Dynamics on Mobile Video User Engagement, Zubair Shafiq, Jeffrey Erman, Lusheng Ji, Alex Liu, Jeffrey Pang, and Jia Wang, *Proceedings of ACM SIGMETRICS*, 2014. (40/238=16%)
14. NetSearch: Googling Large-scale Network Management Data, Tongqing Qiu, Zihui Ge, Dan Pei, Jia Wang, Jun Xu, *Proceedings of IFIP Networking 2014 Conference*, 2014. (56/221=25%)
15. A First Look at Cellular Network Performance during Crowded Events, Zubair Shafiq, Lusheng Ji, Alex Liu, Jeffrey Pang, Shobha Venkataraman, and Jia Wang, *Proceedings of ACM SIGMETRICS*, Pittsburgh, PA, June 2013. (27/196=13%)
16. Event Detection using Customer Care Calls, Yi-Chao Chen, Gene Moo Lee, Nick Duffield, Lili Qiu, and Jia Wang, *Proceedings of IEEE INFOCOM*, Turin, Italy, April 2013. (280/1613=17%)
17. Tiresias: Online Anomaly Detection for Hierarchical Operational Network Data, Chi-Yao Hong, Matthew Caesar, Nick Duffield, and Jia Wang, *Proceedings of the 32nd International Conference on Distributed Computing Systems (ICDCS)*, 2012 (71/515=13%).
18. A First Look at Cellular Machine-to-Machine Traffic – Large Scale Measurement and Characterization, Zubair Shafiq, Lusheng Ji, Alex Liu, Jeffrey Pang, and Jia Wang, *Proceedings of ACM SIGMETRICS*, 2012 (31/203=15%).
19. Characterizing Geospatial Dynamics of Application Usage in a 3G Cellular Data Network, by Zubair Shafiq, Lusheng Ji, Alex Liu, Jeffrey Pang, and Jia Wang, *Proceedings of IEEE INFOCOM*, 2012. (278/1547=18%)
20. Firewall Fingerprinting, by Amir Khakpour, Joshua Hulst, Zihui Ge, Alex Liu, Dan Pei, and Jia Wang, *Proceedings of IEEE INFOCOM*, 2012. (278/1547=18%)
21. Rapid Detection of Maintenance Induced Changes in Service Performance, by Ajay Mahimkar, Zihui Ge, Jia Wang, Jennifer Yates, Yin Zhang, Joanne Emmons, Brian Huntley, and Mark Stockert, *Proceedings of 7th International Conference on emerging Networking EXperiments and Technologies (CoNEXT)*, 2011. (**Best Paper Award**) (30/159=18.8%)
22. Address-based Route Reflection, by Ruichuan Chen, Aman Shaikh, Jia Wang, and Paul Francis, *Proceedings of 7th International Conference on emerging Networking EXperiments and Technologies (CoNEXT)*, 2011. (30/159=18.8%)
23. Practical and Near-Optimal FIB Aggregation with SMALTA, by Zartash Uzmi, Markus Nebel, Ahsan Tariq, Sana Jawad, Ruichuan Chen, Aman Shaikh, Jia Wang, and Paul Francis, *Proceedings of 7th International Conference on emerging Networking EXperiments and Technologies (CoNEXT)*, 2011. (30/159=18.8%)
24. Q-score: Proactive Service Quality Assessment in a Large IPTV System, by Han Hee Song, Zihui Ge, Ajay Mahimkar, Jia Wang, Jennifer Yates, Yin Zhang, Andrea Basso, and Min Chen, *Proceedings of ACM/USENIX Internet Measurement Conference (IMC)*, 2011. (42/220=19%)
25. Towards a Universal Sketch for Origin-Destination Network

- Measurements, by Haiquan Zhao, Nan Hua, Ashwin Lall, Ping Li, Jia Wang and Jun Xu, *Proceedings of the 8th International Conference on Network and Parallel Computing (NPC)*, 2011.
26. Analyzing IPTV Set-Top-Box Crashes, by Han Hee Song, Zihui Ge, Ajay Mahimkar, Jia Wang, Jennifer Yates, and Yin Zhang, *Proceedings of ACM SIGCOMM Workshop on Home Networks (HomeNets)*, 2011.
 27. Characterizing and Modeling Internet Traffic Dynamics of Cellular Devices, by Zubair Shafiq, Lusheng Ji, Alex Liu, and Jia Wang, *Proceedings of ACM SIGMETRICS*, 2011. (26/177=14.7%)
 28. What Happened in my Network? Mining Network Events from Router Syslogs, by Tongqing Qiu, Zihui Ge, Dan Pei, Jia Wang, and Jun Xu, *Proceedings of ACM/USENIX Internet Measurement Conference (IMC)*, 2010. (47/211=22%)
 29. Listen to Me if You can: Tracking user experience of mobile network on social media, by Tongqing Qiu, Junlan Feng, Zihui Ge, Jia Wang, Jun Xu, and Jennifer Yates, *Proceedings of ACM/USENIX Internet Measurement Conference (IMC)*, 2010. (47/211=22%)
 30. TowerDefense: Deployment Strategies for Battling against IP Prefix Hijacking, by Tongqing Qiu, Lusheng Ji, Dan Pei, Jia Wang, and Jun Xu, *Proceedings of the 18th IEEE International Conference on Network Protocols (ICNP)*, 2010. (31/170=18%)
 31. Detecting the Performance Impact of Upgrades in Large Operational Networks, by Ajay Mahimkar, Han Hee Song, Zihui Ge, Aman Shaikh, Jia Wang, Jennifer Yates, Yin Zhang, and Joanne Emmons, *Proceedings of ACM SIGCOMM*, 2010. (33/276=12%)
 32. Scalable Flow-Based Networking with DIFANE, by Minlan Yu, Michael Freedman, Jennifer Rexford, and Jia Wang, *Proceedings of ACM SIGCOMM*, 2010. (33/276=12%)
 33. Modeling User Activities in a Large IPTV System, by Tongqing Qiu, Zihui Ge, Seungjoon Lee, Jia Wang, Jun Xu, and Qi Zhao, *Proceedings of ACM/USENIX Internet Measurement Conference (IMC)*, 2009.
 34. Towards Automated Performance Diagnosis in a Large IPTV Network, by Ajay Mahimkar, Zihui Ge, Aman Shaikh, Jia Wang, Jennifer Yates, Yin Zhang, and Qi Zhao, *Proceedings of ACM SIGCOMM*, 2009. (27/270=10%)
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 36. The Taming of The Shrew: Mitigating Low-Rate TCP-Targeted Attack, by Chia-Wei Chang, Seungjoon Lee, Bill Lin, and Jia Wang, *Proceedings of 29th International Conference on Distributed Computing Systems (ICDCS)*, 2009. (74/455=16%)
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 38. Making Routers Last Longer with ViAggre, by Hitesh Ballani, Paul Francis, Tuan Cao, and Jia Wang, *Proceedings of 6th USENIX Symposium on Networked Systems Design and Implementation (NSDI)*, 2009.
 39. Towards Efficient Large-Scale VPN Monitoring and Diagnosis under Operational Constraints, by Yao Zhao, Zhaosheng Zhu, Yan Chen, Dan Pei, and Jia Wang, *Proceedings of IEEE INFOCOM*, 2009. (282/1435=19.7%)
 40. Troubleshooting Chronic Conditions in Large IP Networks, by Ajay Mahimkar, Jennifer Yates, Yin Zhang, Aman Shaikh, Jia Wang, Zihui Ge, and Cheng Tien Ee, *Proceedings of the ACM Conference*

- on emerging Networking EXperiments and Technologies (CoNEXT)*, 2008. (29/166=17.4%)
41. ViAggre: Making Routers Last Longer!, by Hitesh Ballani, Paul Francis, Tuan Cao, and Jia Wang, *Proceedings of ACM Workshop on Hot Topics in Networking (HotNets VII)*, 2008. (22/110=20%)
 42. Shedding Light on the Glue Logic of the Internet Routing Architecture, by Franck Le, Geoffrey G. Xie, Dan Pei, Jia Wang, and Hui Zhang, *Proceedings of ACM SIGCOMM*, 2008. (35/288=12.2%)
 43. STRID: Scalable Trigger-based Route Incidence Diagnosis, by Feng Wang, Lixin Gao, Oliver Spatscheck, and Jia Wang, *Proceedings of 17th IEEE International Conference on Computer Communications and Networks (ICCCN)*, 2008.
 44. Would Diversity Really Increase the Robustness of the Routing Infrastructure against Software Defects?, by Juan Caballero, Theocharis Kampuris, Dawn Song, and Jia Wang, *Proceedings of 15th Annual Network & Distributed System Security Symposium (NDSS)*, 2008. (21/118=17.7%)
 45. A Data Streaming Algorithm for Estimating Entropies of OD Flows, by Haiquan Zhao, Ashwin Lall, Mitsunori Ogihara, Oliver Spatscheck, Jia Wang, and Jun Xu, *Proceedings of ACM SIGCOMM/USENIX Internet Measurement Conference (IMC)*, 2007. (21/86=24.4%)
 46. A Light-Weight Distributed Scheme for Detecting IP Prefix Hijacks in Realtime, by Changxi Zheng, Lusheng Ji, Dan Pei, Jia Wang, and Paul Francis, *Proceedings of ACM SIGCOMM*, 2007. (35/258=13.5%)
 47. Reliability as an Interdomain Service, by Hao Wang, Yang Richard Yang, Paul H. Liu, Jia Wang, Alex Gerber, and Albert Greenberg, *Proceedings of ACM SIGCOMM*, 2007. (35/258=13.5%)
 48. Towards Quantification of IP Network Reliability, by Hao Wang, Alex Gerber, Albert Greenberg, Jia Wang, and Yang Richard Yang, *Proceedings of ACM SIGCOMM (Poster)*, 2007.
 49. Lightweight Application Classification for Network Management, by Hongbo Jiang, Andrew W. Moore, Zihui Ge, Shudong Jin, and Jia Wang, *Proceedings of ACM SIGCOMM Workshop on Internet Network Management (INM)*, 2007.
 50. A Firewall for Routers: Protecting Against Routing Misbehavior, by Ying Zhang, Zhuoqing Morley Mao, and Jia Wang, *Proceedings of the 37th Annual IEEE/IFIP International Conference on Dependable Systems and Networks (DSN)*, 2007. (53/212=25%)
 51. Wire Speed Packet Classification Without TCAMs: A Few More Registers (And A Bit of Logic) Are Enough, by Qunfeng Dong, Suman Banerjee, Jia Wang, and Dheeraj Agrawal, *Proceedings of ACM SIGMETRICS*, 2007. (29/170=17.1%)
 52. A Framework for Measuring and Predicting Impact of Routing Changes, by Ying Zhang, Zhuoqing Morley Mao, and Jia Wang, *Proceedings of IEEE INFOCOM*, 2007. (252/1400=18%)
 53. Low-Rate TCP-Targeted DoS Attacks Disrupts Internet Routing, by Ying Zhang, Zhuoqing Morley Mao, and Jia Wang, *Proceedings of 14th Annual Network & Distributed System Security Symposium (NDSS)*, 2007. (18/118=15%)
 54. OPTWALL: A Hierarchical Traffic-Aware Firewall, by Subrata Acharya, Bryan Mills, Mehmod Abliz, Taieb Znati, Jia Wang, Zihui Ge, and Albert Greenberg, *Proceedings of 14th Annual Network & Distributed System Security Symposium (NDSS)*, 2007. (18/118=15%)
 55. Compressing Rectilinear Pictures and Minimizing Access Control Lists, by David A. Applegate, Gruia Calinescu, David S. Johnson,

- Howard Karloff, Katrina Ligett, and Jia Wang, *Proceedings of ACM-SIAM Symposium on Discrete Algorithms (SODA)*, 2007.
56. Scaling IP Routing with the Core Router-Integrated Overlay, by Xinyang Zhang, Paul Francis, Jia Wang, and Kaoru Yoshida, *Proceedings of 14th IEEE International Conference on Network Protocols (ICNP)*, 2006. (33/232=14.2%)
 57. A Measurement Study on the Impact of Routing Events on End-to-End Internet Path Performance, by Feng Wang, Zhuoqing Morley Mao, Jia Wang, Lixin Gao, and Randy Bush, *Proceedings of ACM SIGCOMM*, 2006. (27/255=10.6%)
 58. Wire Speed Packet Classification Without TCAM: One More Register (And A Bit of Logic) Is Enough, by Qunfeng Dong, Suman Banerjee, Jia Wang, and Dheeraj Agrawal, *Proceedings of ACM SIGCOMM* (poster), 2006.
 59. Tracking Role of Adversaries in Measuring Unwanted Traffic, by Mark Allman, Paul Barford, Balachander Krishnamurthy, and Jia Wang, *Proceedings of 2nd Workshop on Steps to Reducing Unwanted Traffic on the Internet (SRUTI)*, 2006.
 60. Robust Traffic Matrix Estimation with Imperfect Information: Making Use of Multiple Data Sources, by Qi Zhao, Zihui Ge, Jia Wang, and Jun Xu, *Proceedings of ACM SIGMETRICS*, 2006. (30/217=13.8%)
 61. Packet Classifiers in Ternary CAMs Can Be Smaller, by Qunfeng Dong, Suman Banerjee, Jia Wang, Dheeraj Agrawal, and Ashutosh Shukla, *Proceedings of ACM SIGMETRICS*, 2006. (30/217=13.8%)
 62. Traffic-Aware Firewall Optimization Strategies, by Subrata Acharya, Jia Wang, Zihui Ge, Taieb F. Znati, and Albert Greenberg, *Proceedings of IEEE International Conference on Communications (ICC)*, 2006.
 63. Scalable and Efficient Data Streaming Algorithms for Detecting Common Content in Internet Traffic, by Minh Sung, Abhishek Kumar, Li Li, Jia Wang, and Jun Xu, *Proceedings of 2nd IEEE International Workshop on Networking Meets Databases (NetDB)*, 2006.
 64. On Understanding of Transient Interdomain Routing Failures, by Feng Wang, Lixin Gao, Jia Wang, and Jian Qiu, *Proceedings of 13th IEEE International Conference on Network Protocols (ICNP)*, 2005. (36/212=17%)
 65. Optimizing Network Performance in Replicated Hosting, by Ningning Hu, Oliver Spatscheck, Jia Wang, and Peter Steenkiste, *Proceedings of IEEE Tenth International Workshop on Web Caching and Content Distribution (WCW)*, 2005.
 66. On AS-Level Path Inference, by Zhuoqing Morley Mao, Lili Qiu, Jia Wang, and Yin Zhang, *Proceedings of ACM SIGMETRICS*, 2005. (31/237=13.1%)
 67. Data Streaming Algorithms for Accurate and Efficient Measurement of Traffic and Flow Matrices, by Qi Zhao, Abhishek Kumar, Jia Wang, and Jun Xu, *Proceedings of ACM SIGMETRICS*, 2005. (31/237=13.1%)
 68. Finding a Needle in a Haystack: Pinpointing Significant BGP Routing Changes in an IP Network, by Jian Wu, Zhuoqing Morley Mao, Jennifer Rexford, and Jia Wang, *Proceedings of 2nd Symposium on Networked Systems Design and Implementation (NSDI)*, 2005. (25/112=22.3%)
 69. A Measurement Study of Internet Bottlenecks, by Ningning Hu, Li Li, Zhuoqing Morley Mao, Peter Steenkiste, and Jia Wang, *Proceedings of IEEE INFOCOM*, 2005. (244/1419=17.2%)
 70. Locating Internet Bottlenecks: Algorithms, Measurements, and Implications, by Ningning Hu, Li Li, Zhuoqing Morley Mao, Peter

- Steenkiste, and Jia Wang, *Proceedings of ACM SIGCOMM*, 2004. (31/340=9.11%)
71. Data Streaming Algorithm for Efficient and Accurate Estimation of Flow Size Distribution, by Abhishek Kumar, Min-Ho Sung, Jun Xu, and Jia Wang, *Proceedings of ACM SIGMETRICS*, 2004. (**Best Student Paper Award**) (33/265=12.4%)
 72. Scalable and Accurate Identification of AS-Level Forwarding Paths, by Zhuoqing Morley Mao, David Johnson, Jennifer Rexford, Jia Wang, and Randy Katz, *Proceedings of IEEE INFOCOM*, 2004. (261/1420=18.4%)
 73. Space-Code Bloom Filter for Efficient Per-Flow Traffic Measurement, by Abhishek Kumar, Jun Xu, Jia Wang, Oliver Spatscheck, and Li Li, *Proceedings of IEEE INFOCOM*, 2004. (261/1420=18.4%)
 74. Space-Code Bloom Filter for Efficient Traffic Flow Measurement, by Abhishek Kumar, Jun Xu, Li Li, and Jia Wang, *Proceedings of ACM SIGCOMM Internet Measurement Conference (IMC)*, 2003. (32/109=29.4%)
 75. Towards an Accurate AS-Level Traceroute Tool, by Zhuoqing Morley Mao, Jennifer Rexford, Jia Wang, and Randy Katz, *Proceedings of ACM SIGCOMM*, 2003. (33/319=10.3%)
 76. Packet Classification Using Multidimensional Cutting, by Sumeet Singh, Florin Baboescu, George Varghese, and Jia Wang, *Proceedings of ACM SIGCOMM*, 2003. (33/319=10.3%)
 77. Efficient and Robust Streaming Provisioning in VPNs, by Zhuoqing Morley Mao, David Johnson, Oliver Spatscheck, Jacobus E. van der Merwe, and Jia Wang, *Proceedings of the Twelfth International World Wide Web Conference (WWW)*, 2003. (77/600=12.3%)
 78. Fast Prefix Matching of Bounded Strings, Adam L. Buchsbaum, Glenn S. Fowler, Balachander Krishnamurthy, Kiem-Phong Vo, and Jia Wang, *Proceedings of SIAM ALENEX*, 2003.
 79. Analyzing Peer-to-Peer Traffic Across Large Networks, Subhabrata Sen and Jia Wang, *Proceedings of ACM SIGCOMM Internet Measurement Workshop*, 2002.
 80. Automated Traffic Classification for Application-Specific Peering, Balachander Krishnamurthy and Jia Wang, *Proceedings of ACM SIGCOMM Internet Measurement Workshop*, 2002.
 81. BGP Routing Stability of Popular Destinations, Jennifer Rexford, Jia Wang, Zhen Xiao, and Yin Zhang, *Proceedings of ACM SIGCOMM Internet Measurement Workshop*, 2002.
 82. A Precise and Efficient Evaluation of the Proximity between Web Clients and Their Local DNS Servers, Zhuoqing Morley Mao, Charles D. Cranor, Fred Douglis, Michael Rabinovich, Oliver Spatscheck, and Jia Wang, *Proceedings of the USENIX Annual Technical Conference*, 2002. (25/107=23.4%)
 83. Topology Modeling via Cluster Graphs, Balachander Krishnamurthy and Jia Wang, *Proceedings of ACM SIGCOMM Internet Measurement Workshop*, 2001.
 84. Early Measurements of a Cluster-based Architecture for P2P Systems, Balachander Krishnamurthy, Jia Wang and Yinglian Xie, *Proceedings of ACM SIGCOMM Internet Measurement Workshop*, 2001.
 85. Understanding End-to-End Performance: Testbed and Primary Results, by Jia Wang, Yu Zhang, and Srinivasan Keshav, *Proceedings of IEEE Global Internet Symposium*, 2001.
 86. On Network-Aware Clustering of Web Clients, by Balachander Krishnamurthy and Jia Wang, *Proceedings of ACM SIGCOMM*, 2000. (26/238=10.9%)
 87. Efficient and Accurate Ethernet Simulation, by Jia Wang and

**PAPERS IN
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JOURNALS**

- Srinivasan Keshav, *Proceedings of the 24th IEEE Annual Conference on Local Computer Networks*, 1999.
88. Detecting and Localizing End-to-end Performance Degradation For Cellular Services, Faraz Ahmed, Jeffrey Erman, Zihui Ge, Alex Liu, Jia Wang, and He Yan, *IEEE/ACM Transactions on Networking (ToN)*, Vol. 25, No. 6, 2017.
 89. Firewall Fingerprinting and Denial of Firewalling Attacks, Alex Liu, Amir Khakapour, Joshua Hulst, Zihui Ge, Dan Pei, and Jia Wang, *IEEE Transactions on Information Forensics and Security*, Vol. 12, No. 7, 2017.
 90. Characterizing and Optimizing Cellular Network Performance during Crowded Events, Zubair Shafiq, Lusheng Ji, Alex Liu, Jeffrey Pang, Shobha Venkataraman, and Jia Wang, *IEEE/ACM Transactions on Networking (ToN)*, Vol. 24, No. 3, 2016.
 91. Geospatial and Temporal Dynamics of Application Usage in Cellular Data Network, by Zubair Shafiq, Lusheng Ji, Alex Liu, Jeffrey Pang, and Jia Wang, *IEEE Transactions on Mobile Computing*, Vol. 14, No. 7, 2014.
 92. Large Scale Measurement and Characterization of Cellular Machine-to-Machine Traffic, M. Zubair Shafiq, Lusheng Ji, Alex X. Liu, Jeffrey Pang, Jia Wang, *IEEE/ACM Transactions on Networking (ToN)*, Vol. 21, No. 6, July 2013.
 93. Network Prefix-level Traffic Profiling: Characterizing, Modeling, and Evaluation, by Hongbo Jiang, Zihui Ge, Sudong Jin, and Jia Wang, *Elsevier Computer Networks*, Vol. 54, No. 18, July 2010.
 94. The Taming of The Shrew: Mitigating Low-Rate TCP-Targeted Attack, by Chia-Wei Chang, Seungjoon Lee, Bill Lin, and Jia Wang, *IEEE Transactions on Network Service Management*, Vol. 7, No. 1, March 2010.
 95. On Understanding Transient Interdomain Routing Failures, by Feng Wang, Jian Qiu, Lixin Gao, and Jia Wang, *IEEE/ACM Transaction on Networking (ToN)*, Vol. 17, No. 3, June 2009.
 96. Space-Code Bloom Filter for Efficient Per-Flow Traffic Measurement, by Abhishek Kumar, Jun Xu, and Jia Wang, *IEEE Journal on Selected Areas in Communications (JSAC) Special Issue on Sampling the Internet: Techniques and Application*, Vol. 24, No. 12, December 2006.
 97. Fast Prefix Matching of Bounded Strings, by Adam L. Buchsbaum, Glenn S. Fowler, Balachander Krishnamurthy, Kiem-Phong Vo, and Jia Wang, *ACM Journal of Experimental Algorithmics*, Vol. 8, 2003.
 98. Analyzing Peer-to-Peer Traffic Across Large Networks, Subhabrata Sen and Jia Wang, *ACM/IEEE Transactions on Networking (ToN)*, Vol. 12, No. 2, April 2004.
 99. Automated Provisioning of BGP Customers, by Joel Gottlieb, Albert Greenberg, Jennifer Rexford, and Jia Wang, *IEEE Network*, Vol. 17, No. 6, November/December 2003.
 100. A Survey of Web Caching Schemes for the Internet, by Jia Wang, *ACM Computer Communication Review (CCR)*, Vol. 29, No. 5, October 1999.

PATENTS ISSUED

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2. Fast Prefix Matching of Bounded Strings, Adam L. Buchsbaum, Glenn S. Fowler, Balachander Krishnamurthy, Kiem-Phong Vo, and Jia Wang, United States Patent 7,191,168, March 13, 2007.
3. Method for Fast Network-Aware Clustering, Adam L. Buchsbaum, Glenn S. Fowler, Balachander Krishnamurthy, United States Patent 7,219,160, May 15, 2007.
4. Method for Fast Network-Aware Clustering, Adam L. Buchsbaum, Glenn S. Fowler, Balachander Krishnamurthy, United States Patent 7,627,691, December 1, 2009.
5. Method and Apparatus for Compensating for Performance Degradation of an Application Session, Balachander Krishnamurthy and Jia Wang, United States Patent 7,742,409, June 22, 2010.
6. Estimating Origin-Destination Flow Entropy, Ashwin Lall, Oliver Spatscheck, Mitsunori Ogihara, Jia Wang, Jun Xu, and Haiquan Zhao, United States Patent 7,773,538, August 10, 2010.
7. Scalable and Robust Troubleshooting Framework for VPN Backbones, Zhuoqing Morley Mao, Dan Pei, Jia Wang, and Ying Zhang, United States Patent 7,889,666, February 15, 2011.
8. System and Method for Real-Time Diagnosis of Routing Problems, Lixin Gao, Oliver Spatscheck, Feng Wang, and Jia Wang, United States Patent 7,898,955, March 1, 2011.
9. Compressing Rectilinear Pictures And Minimizing Access Control Lists, David Applegate, Gruia Calinescu, David Johnson, Howard Karloff, Katrina Ligett, Jia Wang, United States Patent 7,958,075, June 7, 2011.
10. Method and Apparatus for Optimizing a Firewall, Subrata Acharya, Zihui Ge, Albert Greenberg, and Jia Wang, United States Patent 7,966,655, June 21, 2011.
11. Method And Apparatus For Detecting Computer-Related Attacks, Lusheng Ji, Dan Pei, and Jia Wang, United States Patent 8,042,183, October 18, 2011.
12. Managing Network Traffic for Improved Availability of Network Services, Zihui Ge, Hongbo Jiang, Shudong Jin, Andrew Moore, and Jia Wang, United States Patent 8,095,635, January 10, 2012.
13. Method and Apparatus for Providing Statistical Event Correlation in a Network, Cheng Ee, Zihui Ge, Ajay Mahimkar, Aman Shaikh, Jia Wang, Jennifer Yates, and Yin Zhang, United States Patent 8,111,626, February 7, 2012.
14. System and Method to Select Monitors That Detect Prefix Hijacking Events, Lusheng Ji, Dan Pei, Tongqing Qiu, and Jia Wang, United States Patent 8,136,160, March 13, 2012.
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PROFESSIONAL ACTIVITIES

Award Committee

- 2018: *ACM SIGCOMM Rising Star Award Committee Chair*
- 2014 - 2017: *IEEE Internet Award Committee Member*
- 2016 - 2017: *IEEE Computer Society Fellow Committee*

Editorial Board

- 2012 - 2016: Associate editor, *IEEE/ACM Transactions on Networking (ToN)*
- 2010 - 2014: Area editor, *ACM SIGCOMM Computer Communication Review (CCR)*
- Guest editor, *IEEE Journal on Selected Areas in Communications (JSAC) Internet Routing Scalability*

Organizing Committee

- 2021: *ACM SIGMETRICS TPC Co-Chair*
- 2020: *ACM SIGCOMM Sponsorship Co-Chair*
- 2018: *ACM SIGMETRICS Finance Chair*
- 2016: *ACM MOBICOM Panel*
- 2014: *ACM SIGCOMM Tutorial Co-Chair*
- 2013: *ACM SIGCOMM General Co-Chair*
- 2013: *ACM SIGMETRICS Publicity Co-Chair*
- 2012: *ACM SIGMETRICS Student Activity Chair*
- 2008: *ACM SIGMETRICS Student Activity Chair*

Technical Program Committee

- 2021: *ACM SIGMETRICS (TPC Co-Chair)*
- IEEE/IFIP DSN*

2020: ACM SIGMETRICS (*Award Committee Chair*)
ACM MOBISYS
ACM CoNEXT
IEEE INFOCOM
IEEE ICNP
IEEE/IFIP DSN
Symposium on SDN Research (SOSR)
ACM SIGCOMM Network Application Integration/Co-Design (NAI) Workshop

2019: ACM SIGMETRICS
ACM MOBISYS
ACM CoNEXT
IEEE INFOCOM
IEEE ICNP
Symposium on SDN Research (SOSR)

2018: ACM CoNEXT
IEEE ICNP
ACM MOBISYS
International World Wide Web Conference (WWW)
IEEE INFOCOM

2017: ACM SIGMETRICS
IEEE ICNP
International World Wide Web Conference (WWW)
Symposium on SDN Research (SOSR)
IEEE INFOCOM
ACM GreenMetrics Workshop

2016: ACM MOBISYS
ACM Internet Measurement Conference (IMC)
IEEE International Conference on Network Protocols (ICNP)
Symposium on SDN Research (SOSR)
IEEE INFOCOM
ACM GreenMetrics Workshop

2015: ACM SIGCOMM
ACM SIGMETRICS
Symposium on SDN Research (SOSR)
IEEE INFOCOM
ACM GreenMetrics Workshop

2014: ACM MOBIHOC
IEEE INFOCOM
IEEE International Conference on Network Protocols (ICNP) (Area Chair)
ACM GreenMetrics Workshop

2013: ACM SIGMETRICS
ACM/USENIX Internet Measurement Conference (IMC)
IEEE INFOCOM
IEEE International Conference on Network Protocols (ICNP)
IEEE 33rd International Conference on Distributed Computing Systems (ICDCS)
ACM GreenMetrics Workshop

2012: ACM SIGMETRICS
IEEE INFOCOM
IEEE International Conference on Network Protocols (ICNP)
ACM GreenMetrics Workshop

2011: ACM SIGCOMM Poster/Demo
IEEE INFOCOM
Third International Conference on COMmunication

Systems and NETWORKS (COMSNETS)
ACM GreenMetrics Workshop
4th Symposium on Configuration Analytics and Automation (SafeConfig)
 2010: *ACM SIGMETRICS*
ACM International Conference on emerging Networking Experiments and Technologies (CoNEXT)
IEEE INFOCOM
Passive and Active Measurement Conference (PAM)
Second International Conference on COMMunication Systems and NETWORKS (COMSNETS)
ACM GreenMetrics Workshop
 2009: *ACM SIGCOMM*
ACM SIGMETRICS
IEEE INFOCOM
Passive and Active Measurement Conference (PAM)
International Symposium on Computer Architecture and High-Performance Computing (SBAC-PAD)
First International Conference on COMMunication Systems and NETWORKS (COMSNETS)
ACM GreenMetrics Workshop
ACM Workshop on Assurable & Useable Security Configuration (SafeConfig)
IEEE Workshop on Secure Network protocols (NPsec)
 2008: *ACM/USENIX Internet Measurement Conference (IMC)*
IEEE INFOCOM
First IEEE Workshop on Automated Network Management (ANM)
Third International Conference on Communication Systems software and middleware (COMSWARE)
 2007: *ACM/USENIX Internet Measurement Conference (IMC)*
IEEE INFOCOM
Passive and Active Measurement Conference (PAM)
Fifteenth IEEE International Workshop on Quality of Service (IWQoS)
IEEE BROADNETS
 2006: *IEEE INFOCOM*
 2005: *ACM SIGMETRICS*
IEEE INFOCOM
ACM SIGCOMM Asia Workshop
 2004: *IEEE INFOCOM*
IEEE Global Internet and Next Generation Networks Symposium
IADIS Applied Computing
 2003: *3rd New York Metro Area Networking Workshop (NYMAN)*
 2002: *IWWE*

Member: *ACM, ACM SIGCOMM*

Fellow: *IEEE, IEEE Communication Society, IEEE Computer Society*