Lin Zhong

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RESEARCH INTERESTS

Mobile & embedded systems, wireless networking

EDUCATION

Ph.D. in Computer Engineering, Princeton University, 2005
M.S. in Electronic Engineering, Tsinghua University, 2000
B.S. in Electronic Engineering with Honors, Tsinghua University, 1998

PROFESSIONAL EXPERIENCE

Department of Computer Science, Yale University
- Professor: January 2020 to present.

Department of Electrical & Computer Engineering, Rice University
- Professor: July 2016 to December 2019.
- Associate Professor: July 2011 to June 2016.
- Assistant Professor: September 2005 to June 2011.

Microsoft Research, Redmond
- Visiting Researcher: Summer 2011, March to December 2012, and October 2019 to August 2020.
- Research Intern, Summer 2004 and Summer 2005.

NEC Labs, America, Princeton, NJ
- Summer Research Intern, 2003.

Department of Electrical Engineering, Princeton University
- Graduate Research Assistant: Fall 2000 to Spring 2005.

HONORS & AWARDS

- Distinguished Paper Finalist, NDSS Symposium 2019
- ACM SIGMOBILE RockStar Award, 2014
- Charles Duncan Award for Outstanding Academic Achievement (Rice University), 2014
- Best Paper Award, ACM MobiSys, 2011, 2013, and 2014
- Best Paper Award, ACM ASPLOS 2014
- Best Paper Award, ACM PhoneSense Workshop, 2011
- National Science Foundation CAREER Award, 2011
- Brown Teaching Award, 2010
- Best Demo/Poster Award, ACM HotMobile, 2010
- Outstanding Faculty Associate, Jones College 2009
- Mark Weiser Best Paper Award, IEEE PerCom 2009
- Best Paper Award, ACM MobileHCI, 2007
- One of the 30 most influential papers published in the first decade of *IEEE Design Automation & Test in Europe Conference* (DATE), 2007
- Harold W. Dodds Honorific Fellowship, Princeton University, 2004-2005
- AT&T Asian Pacific Leadership Award, 2000

PUBLICATIONS

Refereed Conference & Workshop Proceedings

1. Seung-seob Lee, Yanpeng Yu, Yupeng Tang, Anurag Khandelwal, Lin Zhong and Abhishek Bhattacharjee, "MIND: in-network memory management for disaggregated data centers," in Proc. ACM Symp. Operating Systems Principles (*SOSP*), October 2021.
2. Guojun Chen, Noah Weiner, and Lin Zhong, "POD: a smartphone that flies," in Proc. ACM Wrkp. Micro Aerial Vehicle Networks, Systems, and Applications (*DroNet*), June 2021.
3. Jian Ding, Rahman Doost-Mohammady, Anuj Kalia, and Lin Zhong, "Agora: real-time massive MIMO baseband in software" in P*roc. ACM Int. Conf. emerging Networking EXperiments and Technologies* (*CoNEXT*), December 2020.
4. Kevin Boos, Namitha Liyanage, Ramla Ijaz, and Lin Zhong, "Theseus: an experiment in operating system structure and state management," in *Proc. USENIX Symposium on Operating Systems Design and Implementation* (*OSDI*), November 2020.
5. Clayton Shepard, Josh Blum, Ryan E. Guerra, Rahman Doost-Mohammady, and Lin Zhong, "Design and implementation of scalable massive-MIMO networks," in *Proc. International Workshop on Open Software Defined Wireless Networks* (*OpenWireless*), June 2020.
6. Sicong Liu, Junzhao Du, Anshumali Shrivastava, and Lin Zhong, "Privacy adversarial network: representation learning for mobile data privacy," in *Proc. of ACM Interact. Mob. Wearable Ubiquitous Technol.* (*UbiComp*), December 2019.
7. Min Hong Yun and Lin Zhong, "Ginseng: Keeping secrets in registers when you distrust the operating system," in *Proc. of Network and Distributed System Security Symposium* (*NDSS*), February 2019. (***Distinguished Paper Finalist***)
8. Wenqiu Yu and Lin Zhong,"Order matters for accounting idempotent resources," in *Proc. ACM SIGOPS Asia-Pacific Workshop on Systems (APSys)*, August 2018.
9. Clayton Shepard, Rahman Doost-Mohammady, Jian Ding, Ryan Guerra, and Lin Zhong, "ArgosNet: a multi-cell many-antenna MU-MIMO platform," in *Proc. of IEEE Asilomar Conference,* November 2017.
10. Kevin Boos and Lin Zhong, "Theseus: a state spill-free operating system," in *Proc. ACM PLOS Workshop*, October 2017.
11. Kevin Boos, Emillio Del Vecchio, and Lin Zhong, "A characterization of state spill in modern operating systems," in *Proc. ACM EuroSys Conference*, April 2017.
12. Min Hong Yun, Songtao He, and Lin Zhong, "Reducing latency by eliminating synchrony," in *Proc. the World Wide Web Conference (WWW)*, April 2017.
13. Clayton Shepard, Jian Ding, Ryan E. Guerra, and Lin Zhong, "Understanding real many-antenna MU-MIMO channels," in *Proc. of IEEE Asilomar Conference*, November 2016.
14. Robert LiKamWa, Yunhui Hou, Julian Gao, Mia Polansky, and Lin Zhong, "RedEye: Analog ConvNet image sensor architecture for continuous mobile vision," in *Proc. ACM/IEEE Int. Symp. Computer Architecture* (*ISCA*), June 2016.
15. Clayton Shepard, Abeer Javed, and Lin Zhong, "Control channel design for many-antenna MU-MIMO," in *Proc. ACM Int. Conf. Mobile Computing and Networking* (*MobiCom*), September 2015.
16. Kevin A. Boos, Ardalan Amiri Sani, and Lin Zhong, "Eliminating state entanglement with checkpoint-based virtualization of mobile OS services," in *Proc. ACM SIGOPS Asia-Pacific Workshop on Systems* (*APSys)*, July 2015

17. Robert LiKamWa and Lin Zhong,"Starfish: efficient concurrency support for computer vision applications," in *Proc. ACM Int. Conf. Mobile Systems, Applications and Services (MobiSys)*, May 2015.
18. Chao Xu, Xiaozhu Lin, Yuyang Wang, and Lin Zhong, "Automated OS-level device runtime power management," in *Proc. ACM Int. Conf. Architectural Support for Programming Languages and Operating Systems* (*ASPLOS*), March 2015.
19. Hang Yu, Oscar Bejarano, and Lin Zhong, "Combating inter-cell interference in 802.11ac-based multi-user MIMO networks," in *Proc. ACM Int. Conf. Mobile Computing and Networking* (*MobiCom*), September 2014.
20. Mian Dong, Tian Lan, and Lin Zhong, "Rethink energy accounting with multi-player game theory," in *Proc. ACM Int. Conf. Mobile Computing and Networking* (*MobiCom*), September 2014.
21. Chao Xu, Xiaozhu Lin, and Lin Zhong, "Device drivers should not do power management," in *Proc. ACM SIGOPS Asia-Pacific Workshop on Systems* (*APSys*), June 2014.
22. Robert LiKamWa, Zhen Wang, Aaron Carroll, Xiaozhu Lin, and Lin Zhong, "Draining our Glass: an energy and heat characterization of Google Glass," in *Proc. ACM SIGOPS Asia-Pacific Workshop on Systems* (*APSys*), June 2014.
23. Ardalan Amiri Sani, Kevin Boos, Min Hong Yun, and Lin Zhong, "Rio: A system solution for sharing I/O between mobile systems," *Proc. ACM Int. Conf. Mobile Systems, Applications and Services* (*MobiSys*), June 2014. (***Received Best Paper Award***)
24. Ardalan Amiri Sani, Kevin Boos, Shaopu Qin, and Lin Zhong, "I/O paravirtualization at the device file boundary," in *Proc. ACM Int. Conf. Architectural Support for Programming Languages and Operating Systems* (*ASPLOS*), March 2014.
25. Xiaozhu Lin, Zhen Wang, and Lin Zhong, "K2: A mobile operating system for heterogeneous coherence domains," in *Proc. ACM Int. Conf. Architectural Support for Programming Languages and Operating Systems* (*ASPLOS*), March 2014. (***Received Best Paper Award***)
26. Robert LiKamWa, Yunxin Liu, Nicholas D. Lane, and Lin Zhong, "MoodScope: building a mood sensor from smartphone usage patterns," in *Proc. ACM Int. Conf. Mobile Systems, Applications and Services* (*MobiSys*), June 2013.
27. Robert LiKamWa, Bodhi Priyantha, Matthai Philipose, Lin Zhong, and Paramvir Bahl, "Energy characterization and optimization of image sensing toward continuous mobile vision," in *Proc. ACM Int. Conf. Mobile Systems, Applications and Services* (*MobiSys*), June 2013. (***Received Best Paper Award***)
28. Clayton Shepard, Narendra Anand, and Lin Zhong, "Practical performance of MU-MIMO precoding in many-antenna base stations," in *Proc. ACM CellNet Workshop* (collocated with MobiSys), June 2013.
29. Xiaozhu Lin, Zhen Wang, and Lin Zhong, "Supporting distributed execution of smartphone workloads on loosely coupled heterogeneous processors," in *Proc. Wrkshp. Power-Aware Computing and Systems* (*HotPower*), October 2012.
30. Ahmad Rahmati, Chad Tossell, Clayton Shepard, Phil Kortum, and Lin Zhong, "Exploring iPhone usage: the influence of socioeconomic differeces on smartphone adoption, usage and usability," in *Proc. ACM Int. Conf. Human Computer Interaction with Mobile Devices and Services* (*MobileHCI*), September 2012.
31. Clayton Shepard, Hang Yu, Narendra Anand, Li Erran Li, Tom Marzetta, Yang Richard Yang, and Lin Zhong, "Argos: practical base stations with many antennas," in *Proc. ACM Int. Conf. Mobile Computing and Networking* (*MobiCom*), August 2012.

32. Chad Tossell, Phil Kortum, Ahmad Rahmati, Clayton Shepard, and Lin Zhong, "Characterizing web use on smartphones," in *Proc. ACM SIGCHI Conf. Human Factors in Computing Systems* (*CHI*), May 2012.
33. Zhen Wang, Felix Xiaozhu Lin, Lin Zhong, and Mansoor Chishtie, "How far can client-only solutions go for mobile browser speed?" in *Proc. the World Wide Web Conference* (*WWW*), April 2012.
34. Ning Ding, A. Pathak, D. Koutsonikolas, C. Shepard, Y. C. Hu, and Lin Zhong, "Realizing the full potential of PSM using proxying," in *Proc. IEEE INFOCOM Mini-Symposium*, March 2012
35. Xiaozhu Lin, Zhen Wang, Robert LiKamWa, and Lin Zhong, "Using low-power processors in smartphones without knowing them," in *Proc. Int. Conf. Architectural Support for Programming Languages and Operating Systems* (*ASPLOS*), March 2012.
36. Robert LiKamWa, Yunxin Liu, Nicholas D. Lane, and Lin Zhong, "Can your smartphone infer your mood?" in *Proc. ACM Workshop on Sensing Applications on Mobile Phones* (*PhoneSense*), co-located with ACM SenSys, November 2011. (received ***Best Paper Award***)
37. Hang Yu, Lin Zhong, Ashutosh Sabharwal, and David Kao, "Beamforming on mobile devices: a first study," in *Proc. ACM Int. Conf. Mobile Computing and Networking* (*MobiCom*), September 2011.
38. Hang Yu, Ahmad Rahmati, Ardalan Amiri Sani, Lin Zhong, Jehan Wickramasuriya and Venu Vasudevan, "Data broadcasting using mobile FM radio: design, realization and application," in *Proc. ACM Int. Conf. Ubiquitous Computing* (*Ubicomp*), September 2011.
39. Dong Mian and Lin Zhong, "Chameleon: a color-adaptive web browser for mobile OLED displays," in *Proc. ACM Int. Conf. Mobile Systems, Applications, and Services* (*MobiSys*), June 2011 (**received Best Paper Award**)
40. Dong Mian and Lin Zhong, "Self-constructive, high-rate energy modeling for battery-powered mobile systems," in *Proc. ACM Int. Conf. Mobile Systems, Applications, and Services* (*MobiSys*), June 2011.
41. Xuan Bao, Trevor Narayan, Ardalan Amiri Sani, Wolfgang Richter, Romit Roy Choudhury, Lin Zhong, and Mahadev Satyanarayanan, "The case for context-aware compression," to appear in *Proc. ACM Int. Workshop on Mobile Computing Systems and Applications* (*HotMobile*), March 2011.
42. Zhen Wang, Xiaozhu Lin, Lin Zhong, and Mansoor Chistie, "Why mobile browsers are slow," in Proc. *ACM Int. Workshop on Mobile Computing Systems and Applications* (*HotMobile*), 2011.
43. Xiaozhu Lin, Ahmad Rahmati, and Lin Zhong, "Dandelion: A framework for transparently programming phone-centered wireless body sensor applications for health," in *Proc. ACM Wireless Health*, October, 2010.
44. Chad Tossel, Phillip Kortum, Clayton Shepard, Ahmad Rahmati, and Lin Zhong, "Assessing the performance of common tasks on handheld mobile computers," in *Proc. Human Factors and Ergonomics Society* (*HFES*), September 2010.
45. Ardalan Amiri Sani, Lin Zhong, and Ashutosh Sabharwal, "Directional antenna diversity for mobile devices: characterizations and solutions," in *Proc. ACM Int. Conf. Mobile Computing and Networking* (*MobiCom*), September 2010.
46. Ardalan Amiri Sani, Hasan Dumanli, Lin Zhong, and Ashutosh Sabharwal, "Power-efficient directional wireless communication on small form-factor mobile devices, " *in Proc. ACM/IEEE Int. Symp. Low Power Electronics and Design* (*ISLPED*), August 2010.
47. Clay Shepard, Ahmad Rahmati, Chad Tossel, Lin Zhong, and Phil Kortum, "LiveLab: measuring wireless networks and smartphone users in the field," in *Proc. Workshop on Hot Topics in Measurement & Modeling of Computer Systems* (*HotMetrics*), June 2010.
48. Ahmad Rahmati, Lin Zhong, Jehan Wickramasuriya, and Venu Vasudevan, and Daniel Stewart, "Enabling pervasive mobile applications with the FM radio broadcast data system," in *Proc. ACM Int. Workshop on Mobile Computing Systems and Applications* (*HotMobile*), February 2010.

49. Hang Yu, Lin Zhong, and Ashutosh Sabharwal, "Adaptive RF chain management for energy-efficient spatial-multiplexing MIMO transmission," in *Proc. ACM/IEEE Int. Symp. Low Power Electronics and Design* (*ISLPED*), August 2009.
50. Jiayang Liu, Lin Zhong, Jehan Wickramasuriya, and Venu Vasudevan, "User evaluation of lightweight user authentication with a single tri-axis accelerometer," in *Proc. ACM Int. Conf. Human Computer Interaction with Mobile Devices and Services* (*MobileHCI*), September 2009.
51. Xiaoming Chen, Zhendong Zhao, Ahmad Rahmati, Ye Wang, and Lin Zhong, "Sensor-assisted motion estimation for efficient H.264/AVC video encoding," in *Proc. ACM Int. Conf. Multimedia*, October 2009.
52. Xiaohan Ma, Mian Dong, Lin Zhong, and Zhigang Deng, "Statistical power consumption analysis and modeling for GPU-based computing," in *Proc. ACM Wrkshp. Power Aware Computing and Systems* (*HotPower*), Co-located with SOSP, October 2009.
53. Mian Dong, Kevin Choi, and Lin Zhong, "Power-saving color transformation of mobile graphical user interfaces on OLED-based displays," in *Proc. ACM/IEEE Int. Symp. Low Power Electronics and Design* (*ISLPED*), August 2009.
54. Mian Dong, Kevin Choi, and Lin Zhong, "Power modeling of graphical user interfaces on OLED displays," in *Proc. ACM/IEEE Design Automation Conf.* (*DAC*), July 2009.
55. Yunxin Liu, Ahmad Rahmati, Yuanhe Huang, Hyukjae Jang, Lin Zhong, and Yongguang Zhang, "xShare: supporting impromptu sharing of mobile phones," in *Proc. ACM Int. Conf. Mobile Systems, Applications, and Services* (*MobiSys*), June 2009.
56. Stephen So, Ardalan Amiri Sani , Lin Zhong, Frank Tittel ,and Gerard Wysocki, "Laser spectroscopic trace-gas sensor networks for atmospheric monitoring applications," in *Proc. IPSN Wrkshp. Sensor Networks for Earth and Space Science Applications* (*ESSA*), April 2009.
57. Husheng Li, Lin Zhong, and Kun Zheng, "Drowsy transmission: physical layer energy optimization for transmitting random packet traffic," in *Proc. IEEE Conf. Computer Communications* (*INFOCOM*), April 2009.
58. Jiayang Liu, Zhen Wang, Lin Zhong, Jehan Wickramasuriya, and Venu Vasudevan, "uWave: Accelerometer-based personalized gesture recognition and its applications," in *Proc. IEEE Int. Conf. Pervasive Computing and Communication* (*PerCom*)*,* March 2009. (**received the Mark Weiser Best Paper Award**)
59. Ahmad Rahmati*, Clayton Shepard*, and Lin Zhong, "NoShake: Content stablization for shaking screens of mobile devices," in *Proc. IEEE Int. Conf. Pervasive Computing and Communication* (*PerCom*)*,* March 2009. (*Equal contribution)
60. Guangming Hong, Ahamd Rahmati, Ye Wang, and Lin Zhong, "SenseCoding: Acceleration-assisted motion estimation for efficient video encoding," in *Proc. ACM Int. Conf. Multimedia*, October 2008.
61. Mian Dong and Lin Zhong, "Challenges to crossbar integration of nanoscale two-terminal symmetric memory devices," in *Proc. IEEE Int. Conf. Nanotechnology*, August 2008.
62. Jiayang Liu and Lin Zhong, "Micro power management of active 802.11 interfaces," in Proc. *ACM/USENIX Int. Conf. Mobile Systems, Applications, and Services* (*MobiSys*)*,* June 2008.
63. Mian Dong and Lin Zhong, "Logic synthesis with nanowire crossbar: Reality check and standard cell-based integration," in *Proc. IEEE Design Automation & Test in Europe Conf* (*DATE*), March 2008.
64. Nilanjan Banerjee, Ahmad Rahmati, Mark Corner, Sami Rollins, and Lin Zhong, "Users and batteries: interactions and adaptive energy management in mobile systems," in *Proc. Int. Conf. Ubiquitous Computing* (*Ubicomp*), September 2007.

65. Ahmad Rahmati and Lin Zhong, "Usability evaluation of a commercial Pocket PC phone: a pilot study," in *Proc. ACM Int. Conf. Mobile Technology, Applications and Systems* (*Mobility*), September 2007.

66. Ahmad Rahmati, Angela Qian, and Lin Zhong, "Understanding human-battery interaction on mobile phones," in *Proc. ACM Int. Conf. Human Computer Interaction with Mobile Devices and Services* (*MobileHCI*), September 2007. (**received Best Paper Award**)

67. Quming Zhou, Lin Zhong, and Kartik Mohanram, "Power signal processing: a new perspective for power analysis and optimization," in *Proc. ACM/IEEE Int. Symp. Low Power Electronics Design* (*ISLPED*), August 2007.

68. Lin Zhong, Diana El-Daye, Brett Kaufman, Nick Tobaoda, Tamer Mohamed, and Michael Liebschner, "OsteoConduct: Wireless body-area communication based on bone conduction," in *Proc. Int. Conf. Body Area Networks* (*BodyNets*), June 2007.

69. Le Yan, Lin Zhong, and Niraj Jha, "Energy comparison and optimization of wireless body-area network technologies," in Proc. *Int. Conf. Body Area Networks* (*BodyNets*), June 2007.

70. Ahmad Rahmati, Matti Hiltunen, Lin Zhong, and Rittwik Jana, "Reliability techniques for RFID-based object tracking applications," in Proc. *IEEE/IFIP Int. Conf. Dependable Systems and Networks* (*DSN*), June 2007.

71. Ahmad Rahmati and Lin Zhong, "Context-for-Wireless: context-sensitive energy-efficient wireless data transfer," in Proc. *ACM/USENIX Int. Conf. Mobile Systems, Applications, and Services* (*MobiSys*), June 2007.

72. Lin Zhong, Bin Wei, and Mike Sinclair, "SMERT: Energy-efficient design of a multimedia messaging system for mobile devices," in Proc. *ACM/IEEE Design Automation Conf.* (*DAC*), July, 2006.

73. Lin Zhong, Mike Sinclair, and Ray Bittner, "A Phone-centered body sensor network platform: Cost, energy efficiency, and user interface," in Proc. *IEEE Workshop on Body Sensor Networks*, April 2006.

74. Lin Zhong, Mike Sinclair and Niraj K. Jha, "A Personal-area network of low-power wireless interfacing devices: System & hardware design," in Proc. *ACM Int. Conf. Human Computer Interaction with Mobil Devices and Services* (*MobileHCI*), Sept. 2005.

75. Le Yan, Lin Zhong, and Niraj K. Jha, " Towards a responsive, yet power-efficient, operating system: A Holistic approach," in Proc. *IEEE/ACM Int. Sym. on Modeling, Analysis, and Simulation of Computer & Telecommunication Systems* (*MASCOTS*), Sept. 2005.

76. Le Yan, Lin Zhong, and Niraj K. Jha, "User-perceived latency based dynamic voltage scaling for interactive applications," in Proc. *ACM/IEEE Design Automation Conf.* (*DAC*), June 2005.

77. Lin Zhong and Niraj K. Jha, "Energy efficiency for handheld computer interfaces: Limits, characterization, and practice," in Proc. *USENIX/ACM Int. Conf. Mobile Systems, Applications, and Services* (*MobiSys*), June 2005.

78. Lin Zhong, Srivaths Ravi, Anand Raghunathan, and Niraj K. Jha, "Power estimation for cycle-accurate functional descriptions of hardware," in Proc. *IEEE/ACM Int. Conf. on Computer-Aided Design* (*ICCAD*), Nov. 2004.

79. Yunsi Fei, Lin Zhong, and Niraj K. Jha, "An energy-aware framework for coordinated dynamic software management in mobile computers," in Proc. *IEEE/ACM Int. Symp. on Modeling, Analysis, and Simulation of Computer & Telecommunication Systems* (*MASCOTS*), Oct. 2004.

80. Rui Zhang, Pallav Gupta, Lin Zhong, and Niraj K. Jha, "Synthesis and optimization of threshold logic networks with application to nanotechnologies," in *Proc. IEEE Design Automation & Test in Europe Conf* (*DATE*), Feb. 2004. (selected as **one of the most influential papers in the first decade of DATE**)

81. Lin Zhong and Niraj K. Jha, "Dynamic power optimization for interactive systems," in Proc. *IEEE Int. Conf. on VLSI Design*, Jan. 2004.
82. Pallav Gupta, Lin Zhong and Niraj K. Jha, "A high-level interconnect power model for design space exploration," in Proc. *IEEE/ACM Int. Conf. on Computer-Aided Design* (*ICCAD*), Nov. 2003.
83. Lin Zhong and Niraj K. Jha, "Graphical user interface energy characterization for handheld computers," in Proc. *IEEE/ACM Int. Conf. on Compilers, Architectures & Synthesis for Embedded Systems* (*CASES*), Oct. 2003.
84. W. Wang, T. K. Tan, J. Luo, Y. Fei, L. Shang, K. S. Vallerio, Lin Zhong, A. Raghunathan, and N. K. Jha, "A comprehensive high-level synthesis system for control-flow intensive behaviors for low power," in Proc. *IEEE Great Lakes VLSI Symp.*, Apr. 2003.
85. Lin Zhong and Niraj K. Jha, "Interconnect-aware high-level synthesis for low power," in Proc. *IEEE/ACM Int. Conf. on Computer-Aided Design* (*ICCAD*), Nov. 2002.
86. Lin Zhong, Jiong Luo, Yunsi Fei and Niraj K. Jha, "Register binding based power management for high-level synthesis of control-flow intensive behaviors," in Proc. *IEEE Int. Conf. on Computer Design* (*ICCD*), Sept. 2002.
87. Lin Zhong, Jia Liu, and Runsheng Liu, "Rejection based on a posteriori probability estimated by MLP with application for Mandarin voice dialer on ASIC," in Proc. *IEEE ICASSP*, 2000.
88. Lin Zhong, Yuanyuan Shi, and Runsheng Liu, "A dynamic neural network for syllable recognition," in *Proc. Int. Joint. Conf. Neural Networks* (*IJCNN*), 1999.

Refereed Journal Articles

1. Xing Zhang, Lin Zhong, and Ashutosh Sabharwal, "Directional training for FDD massive MIMO," to appear in *IEEE Transactions on Wireless Communication*.
2. Evan Everett, Clayton Shepard, Lin Zhong, and Ashutosh Sabharwal,"SoftNull: Many-antenna full-duplex wireless via digital beamforming," in *IEEE Transactions on Wireless Communications*, December 2016.
3. Ahmad Rahmati, Clayton Shepard, Chad Tossell, Lin Zhong, and Phil Kortum, "Practical context awareness: measuring and utilizing the context dependency of mobile usage," in *IEEE Transactions on Mobile Computing,* September 2015.
4. Xiaozhu Lin, Zhen Wang, and Lin Zhong, "K2: A mobile operating system for heterogeneous coherence domains," in *ACM Transactions on Computer Systems,* June 2015.
5. Ahmad Rahmati, Clayton Shepard, Chad Tossell, Lin Zhong, Phillip Kortum, Angela Nicoara, and Jatinder Singh, "Seamless flow migration on smartphones without network support," in *IEEE Transactions on Mobile Computing,* March 2014.
6. Christopher Hunter, Lin Zhong, and Ashutosh Sabharwal, "Leveraging physical layer cooperation for energy conservation," in *IEEE Transactions on Vehicular Technology*, January 2014.
7. Ardalan Amiri Sani, Zhiyong Tan, Peter Washington, Mira Chen, Sharad Agarwal, Lin Zhong, and Ming Zhang, "The wireless data drain of users, apps, and platforms," in *ACM SIGMOBILE Mobile Computing and Communications Review*, October 2013.
8. Ahmad Rahmati and Lin Zhong, "Studying smartphone usage: lessons from a four-month field study," in *IEEE Transactions on Mobile Computing*, July 2013.
9. Xiaohan Ma, Mian Dong, Lin Zhong, and Zhigang Deng, "Performance and power consumption characterization of 3D mobile games," in *IEEE Computer*, April 2013.

10. Jun Yao, Jian Lin, Yanhua Dai, Gedeng Ruan, Zheng Yan, Lei Li, Lin Zhong, Douglas Natelson, and James M. Tour, "Highly transparent nonvolatile resistive memory devices from silicon oxide and graphene, " *Nature Communications*, October 2012.
11. Chad Tossell, Phillip Kortum, Clayton Shepard, Ahmad Rahmati, and Lin Zhong, "An Empirical Analysis of Smartphone Personalization: Measurement and User Variability", in *Behavior & Information Technology*, vol. 31, no.10, October 2012.
12. Mian Dong and Lin Zhong, "Power modeling and optimization of OLED displays," in *IEEE Trans. Mobile Computing*, September 2012.
13. Hang Yu, Lin Zhong, Ashutosh Sabharwal, "Power Management of MIMO Network Interfaces on Mobile Systems," in *IEEE Trans. VLSI*, July 2012.
14. Chad Tossell, Phillip Kortum, Clayton Shepard, Ahmad Rahmati, and Lin Zhong, "Getting real: A naturalistic methodology for using smartphones to collect mediated communications", in *Advances in Human-Computer Interaction*, June 2012.
15. Mian Dong and Lin Zhong, "Chameleon: a color-adaptive web browser for mobile OLED displays," in *IEEE Transactions on Mobile Computing*, May 2012.
16. Chad Tossell, Phillip Kortum, Clayton Shepard, Laura Barg-Walkow, Ahmad Rahmati, and Lin Zhong, "A Longitudinal Study of Emoticon Use in Text Messaging from Smartphones", in *Computers in Human Behavior*, vol. 28, no. 2, March 2012.
17. Jun Yao, Lin Zhong, Douglas Natelson, and James M. Tour, "In situ imaging of the conducting filament in a silicon oxide resistive switch," *Nature Scientific Reports*, 2:242, 1-5, 2012.
18. Jun Yao, Lin Zhong, Douglas Natelson, and James Tour, "Silicon Oxide is a non-innocent surface for molecular electronics and nanoelectronics studies," in *Journal of the American Chemical Society*, 133(4), 2011.
19. Jun Yao, Lin Zhong, Douglas Natelson, and James Tour, "Intrinsic resistive switching and memory effects in silicon oxide," in *Applied Physics A* (Materials Science & Processing), 102(4), 2011.
20. Xiaoming Chen, Zhendong Zhao, Ahmad Rahmati, Ye Wang, and Lin Zhong, "SaVE: Sensor-Assisted Motion Estimation for Efficient H.264/AVC Encoding," in *IEEE Trans. Circuits and Systems for Video Technology*, March 2011.
21. Ahmad Rahmati and Lin Zhong, "Context-based network estimation for energy-efficient ubiquitous wireless connectivity," in *IEEE Transactions on Mobile Computing,* January 2011.
22. Clayton Shepard, Ahmad Rahmati, Chad Tossell, Lin Zhong, and Phillip Kortum, "LiveLab: measuring wireless networks and smartphone users in the field", in *ACM SIGMETRICS Perform. Eval. Rev.*, vol. 38, no. 3, December 2010.
23. Yunxin Liu, Ahmad Rahmati, Yuanhe Huang, Hyukjae Jang, Lin Zhong, Yongguang Zhang, and Shensheng Zhang, "Design, realization, and evaluation of xShare for impromptu sharing of mobile phones," in *IEEE Trans. Mobile Computing*, December 2010.
24. Jun Yao, Zhengzong Sun, Lin Zhong, Douglas Natelson, and James Tour, "Resistive switches and memories from silicon oxide," in *ACS Nano Letters*, 2010.
25. Jun Yao, Lin Zhong, Zengxing Zhang, Tao He, Zhong Jin, Patrick J. Wheeler, Douglas Natelson, and James M. Tour, "Resistive switching in nanogap systems on SiO_2 substrates," in *Small*, 5 (24), pp.2910-2915, 2009.
26. Jiayang Liu, Zhen Wang, Lin Zhong, Jehan Wickramasuriya, and Venu Vasudevan, "uWave: Accelerometer-based personalized gesture recognition and its applications," in *Pervasive and Mobile Computing*, vol. 5, issue 6, pp. 657-675, December 2009.

27. Jun Yao, Zhong Jin, Lin Zhong, Douglas Natelson, and James M. Tour, "Two-terminal nonvolatile memories based on single-walled carbon nanotubes," in *ACS Nano*, 3 (12), pp. 4122-4126, 2009.
28. Ahmad Rahmati and Lin Zhong, "Human-battery interaction on mobile phones," in *Pervasive and Mobile Computing, vol. 5, no. 5,* October 2009.
29. Mian Dong and Lin Zhong, "Nanowire crossbar logic and standard cell-based integration," in *IEEE Trans. on Very Large Scale Integration Systems,* August 2009.
30. Yunsi Fei, Lin Zhong, and Niraj K. Jha, "An energy-aware framework for dynamic software management in mobile computing systems," *ACM Trans. on Embedded Computing Systems,* April 2008.
31. Jun Yao, Lin Zhong, Douglas Natelson, and James M. Tour, "Etching-dependent reproducible memory switching in vertical SiO_2 structures," in *Applied Physics Letters*, vol. 93, issue 25, 2008
32. Lin Zhong and Niraj K. Jha, "Dynamic power optimization targeting user delays in interactive systems," *IEEE Trans. on Mobile Computing,* November 2006.
33. Lin Zhong, Srivaths Ravi, Anand Raghunathan and Niraj K. Jha, "RTL-aware cycle-accurate functional power estimation," *IEEE Trans. on Computer-Aided Design of ICs & Systems,* October 2006.
34. K. S. Vallerio, Lin Zhong and N. K. Jha, "Energy-efficient graphical user interface design," *IEEE Trans. on Mobile Computing,* July 2006.
35. Lin Zhong and N. K. Jha, "Interconnect-aware low power high-level synthesis," *IEEE Trans. on Computer-Aided Design of ICs & Systems*, Mar. 2005.
36. Rui Zhang, Pallav Gupta, Lin Zhong, and Niraj K. Jha, "Threshold network synthesis and optimization and its application to nanotechnologies," *IEEE Trans. on Computer-Aided Design of ICs & Systems*, Jan. 2005.
37. Jiong Luo, Lin Zhong, Yunsi Fei and Niraj K. Jha, "Register binding based RTL power management for control-flow intensive designs," *IEEE Trans. on Computer-Aided Design of ICs & Systems*, Aug. 2004.

ACTIVE FERDERAL GRANTS

- *National Science Foundation,* AI Institute for Edge Computing Leveraging Next Generation Networks (Athena), 2021-2026, $20,000,000, Co-PI (Yale Lead, Systems Thrust Lead)
- *National Science Foundation*, CNS Core: Small: Disentangled System Software, $499,999, 2019-2022, PI.
- *National Science Foundation,* PPoSS: Planning: High-Performance Certified Trust for Global-Scale Applications, $250,000, 2021-2022, Co-PI.
- *National Science Foundation*, CNS Core: Small: Rethinking Runtime Power Management for Mobile System-on-a-Chip, $520,719, 2019-2022, PI.
- *National Science Foundation/*PAWR, RENEW: A Reconfigurable Eco-system for Next-generation End-to-end Wireless, $5,000,000, 2018-2023, co-PI (PI: Ashutosh Sabharwal and other co-PIs).
- *National Science Foundation*, Collaborative Research: Computational Photo-Scatterography: Unraveling Scattered Photons for Bio-Imaging, $10,000,000, 2018-2023, Co-PI (PI: Ashutosh Sabharwal and other co-PIs).

PAST FEDERAL GRANTS

- *National Science Foundation*, SaTC: CORE: Medium: Collaborative: Defending against Compromise and Manipulation of Mobile Communities, $499,999, 2017-2020, Rice PI (Leading PI Ben Y. Zhao).

- *National Science Foundation*, CCSS: Programmable Mixed-Signal Vision Sensor for Continuous Mobile Vision, $350,000, 2016-2019, PI.
- *National Science Foundation,* NeTS: Large: Practical Foundations for Networking with Many-Antenna Base Stations, $2,400,000, 2015-2020, PI (Co-PI: Edward Knightly, Ashutosh Sabharwal and Ness Shroff).
- *National Science Foundation,* NeTS: Large: Collaborative Research: Foundations of Hierarchical Full-duplex Wireless Networks, $1,800,000, 2013-2018, Co-PI (PI: Ashutosh Sabharwal; other Co-PI: Edward Knightly)
- *National Science Foundation,* CSR: Small: I/O Virtualization at the Device File Boundary and its Applications, $413,000, 2014-2017, PI.
- *National Science Foundation,* II-NEW: A Reconfigurable Multi-Cell Research Platform for Massive Multiple Input Multiple Output (MIMO) Networks, $1,000,000, 2014-2017, PI (Co-PI: Ashutosh Sabharwal and Edward Knightly)
- *National Science Foundation,* EARS: Enhanced Spectrum Availability and MU-MIMO Coordination for High Spatial-Spectral Efficiency, $597,125, 2014-2017, Co-PI (PI: Edward Knightly)
- *National Science Foundation,* MRI: Development of ScaleMed: A Platform for Scalable mHealth Research and Development, $400,000, 2014-2017, Co-PI (PI: Ashutosh Sabharwal; other Co-PI: Ashok Veeraraghavan)
- *National Science Foundation,* CSR: Small:Per-Process Energy Accounting in Mobile Systems, $440,000, 2012-2015, Leading PI (Other PI: Tian Lan from George Washington University)
- *National Science Foundation,* CAREER: Reinventing Smartphones for Sensing, $450,000, 2011-2016, PI.
- *National Science Foundation,* NeTS: Small: LAWN: Scaling Up Cellular Data Networks using a Large Number of Antennas, $450,000, 2012-2015, Leading PI (Other PI: Richard Yang from Yale University)
- *National Science Foundation,* MRI: Development and Deployment of an Operational and Programmable Diverse-Spectrum Access Network, $2,940,000, 2011-2015, Co-PI (PI: Edward Knightly, other Co-PIs Ashutosh Sabharwal and Will Reed)
- *National Science Foundation,* NetSE: Large: Urban-Scale Polymorphic Wireless Networks: Community-Driven Assessment, Design, and Access, $1,800,000, 2010-2015, Co-PI (PI: Edward Knightly, other Co-PIs Bob Stein and Will Reed)
- *National Science Foundation,* CSR:Medium: Collaborative Research: System Solutions for Context-aware and Energy-Efficient Mobile Displays, $700,000, 2011-2014, Leading PI (other PI Massoud Pedram from USC)
- *National Science Foundation*, NSF/FDA SIR: System Solutions for Improved Image Quality of Context-aware Mobile Displays, $105, 000, 2011-2012, PI.
- *National Science Foundation*, MRI: Development of mobileWARP-A Platform for Next-Generation Wireless Networks and Mobile Applications, $2,000,000, 2009-2013, Co-PI (PI: Sabharwal, other Co-PIs: Aazhang, Cavallaro, Knightly, Dacso)
- *National Science Foundation*, CRI/IAD: Programmable and At-Scale Infrastructure for Wireless Access, Mobile Computing, and Health Sensing, $1,500,000, 2008-2012, Co-PI (PI: Edward Knightly)
- *National Science Foundation*, ECCS: Multi-Layer Integrated Resource Management for Mobile Wireless Systems, $350,000, 2009-2012, Co-PI (PI: Cavallaro)

- *National Science Foundation*, HCC-Medium: Collaborative Research: Understanding and Optimizing Wireless Mobile Computing for Underserved Urban Communities, $692,000, 2008-2011, PI (Co-PIs: Knightly, Crowder, and Kortum)
- *National Science Foundation,* HCC: Human Factors in Energy-Efficient Mobile Computing System Design, PI, $492,970, 2007-2011.
- *National Science Foundation*, CSR---EHS: Coordinated Energy Optimization of Mobile Embedded Systems with User Information, PI, $178,000, 2007-2010.
- *National Science Foundation*, MRI: Development of Open-access Photonic Networked Sensors (PHOTONS) for Security, Industrial and Environmental Applications, $362,000, 2007-2010, Co-PI (PI: Sabharwal, other Co-PIs: Koushanfar, Tittel, and Wysocki)
- *National Science Foundation*, NeTS-WN: Collaborative Research: Mesh Networks for Under-Served Urban Communities: Engaging Users and Integrating Mobile Access and Health Sensing, $378,000, 2007-2009, Co-PI (PI: Knightly)

UNIVERSITY SERVICES

- Chair, CS Faculty Search Committee 2021
- Chair, CS Ph.D. Admission Committee 2021 and 2022

Rice University
- Chair, Faculty Search Committee, 2015 and 2016
- Chair, Computer Engineering Undergraduate Curriculum Committee 2013
- Member, ECE Department Visibility Committee 2005-2006, 2014-Present
- Member, ECE Department Graduate Committee 2006-2007
- Member, ECE Department Undergraduate Committee, 2007-Present
- Member, ECE Department Faculty Search Committee, 2009-2012
- Faculty Associate, Hanszen College 2005-2008
- Division Advisor (Engineering), Jones College, 2008-2012
- Member, University Committee on Examinations and Standing, 2016-Present

PROFESSIONAL SERVICES

- Steering Committee member: ACM MobiSys
- Program Committee Co-Chair: WiNTECH 2008, ACM MobiSys 2012, HotPower 2013, IPSN 2014, MCS 2014, ACM APSys 2016, ACM HotMobile 2019.
- Member, Program committees for MobiSys 2007, 2008, 2010-2015, 2017-2019; MobiCom 2009, 2012-2015, 2017-2019; HotMobile 2009, 2010, 2012, 2013, and 2015; ASPLOS 2013, 2014 and 2019 (ERC); DSN 2013 and 2014; SigComm 2015; USENIX ATC 2015 and 2020; SenSys 2013 and 2014; NSDI 2017-2022
- Panelist, NSF proposal review panels

PROFESSIONAL SOCIETIES

IEEE (Fellow); ACM (Fellow)

TEACHING

- CPSC429/529: Principles of Computer System Design, Fall 2021, Yale
- CPSC425/525: Mobile and embedded systems, Spring 2021, Yale
- CPSC626: Human factors in computer systems, Fall 2020, Yale
- ELEC513/COMP513: Complexity in modern systems, Spring 2013-2019, Rice
- ELEC528 Mobile & Embedded System Design and Applications, Spring 2006, Rice
- ELEC518 Energy Efficiency in Modern Systems, Spring 2009-2011, Rice

- ELEC424 Mobile & Embedded System, Fall 2006-2011, 2013, 2014, 2016-2018 Rice
- ELEC527 Nano Computing, Spring 2007-2008, Rice (co-taught with Jim Tour)
- ELEC101 Elements of Electrical Engineering, Spring 2010-2011, Rice (co-taught with Ashutosh Sabharwal)

STUDENTS MENTORED

Current

Namitha Liyanage	Ph.D. student, Yale University
Ramla Ijaz	Ph.D. student, Yale University
Caihua Li	Ph.D. student, Yale University
Guojun Chen	Ph.D. student, Yale University
Zhiyao Ma	Ph.D. student, Yale University
Yue Wu	Ph.D. student, Yale University

Graduated

Kevin Boos (Ph.D., 2020) (first job: Founder of Theseus Systems)
Min Hong Yun (Ph.D., 2018) (first job: Google)
Clayton Shepard (Ph.D. , 2017) (first job: Co-Founder and CTO of Skylark Wireless)
Robert LiKamWa (Ph.D., 2016) (first job: Assistant Professor of EE and Media, Arizona State University)
Ardalan Amiri Sani (Ph.D., 2015) (first job: Assistant Professor of CS, University of California-Irvine)
Hang Yu (Ph.D., 2015) (first job: Schlumberger; now MobiSport)
Xiaozhu Lin (Ph.D., 2014) (first job: Assistant Professor of ECE, Purdue University)
Mian Dong (Ph.D., 2013) (first job: Samsung Research-America; now MobiSport (co-founder))
Ahmad Rahmati (Ph.D., 2012) (first job: Nokia Research; now Apple Inc.)
Jun Yao (Ph.D., 2011, co-advised with James Tour and Douglas Natelson) (first job: Postdoc Harvard; now Assistant Professor of ECE, University of Massachusetts-Amherst)

Jian Ding (M.S., 2019) (first job, Yale Graduate School)
Jie Liao (M.S., 2016) (first job: Facebook)
Eddie Reyes (M.S., 2015) (first job: Startup)
Chao Xu (M.S., 2014) (first job: Google)
Zhen Wang (M.S., 2013) (first job: Google)
Siqi Zhao (MS, 2013) (first job: Amazon)
Hasan Dumanli (MS, 2009) (first job: Schlumberger)
Jiayang Liu (MS, 2008) (first job: Microsoft)