

# 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

## HONORS & AWARDS

- ACM SIGMOBILE RockStar Award, 2014
- Charles Duncan Award for Outstanding Academic Achievement (Rice University), 2014
- Best Paper Award, ACM MobiSys, 2014
- Best Paper Award, ACM ASPLOS 2014
- Best Paper Award, ACM MobiSys, 2013
- Best Paper Award, ACM PhoneSense Workshop, 2011
- Best Paper Award, ACM MobiSys, 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

## PROFESSIONAL EXPERIENCE

- Professor: July 2016 to present, Dept. of ECE, Rice University
- Associate Professor: July 2011 to June 2016, Dept. of ECE, Rice University
- Visiting Researcher: May to Aug. 2011 and Mar. to Dec. 2012, Microsoft Research, Redmond
- Assistant Professor: September 2005 to June 2011, Dept. of ECE, Rice University
- Summer Research Intern, 2004 and 2005, Microsoft Research, Redmond, WA
- Summer Research Intern, 2003, NEC Labs, America, Princeton, NJ
- Graduate Research Assistant: Fall 2000 to Spring 20005, Princeton University

## PUBLICATIONS

### *Refereed Conference & Workshop Proceedings*

1. 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.

2. 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.
3. 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.
4. 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.
5. 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.
6. Lin Zhong and Niraj K. Jha, "Dynamic power optimization for interactive systems," in Proc. *IEEE Int. Conf. on VLSI Design*, Jan. 2004.
7. 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**)
8. 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.
9. 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.
10. 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.
11. 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.
12. 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.
13. 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.
14. 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.
15. 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.
16. 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.
17. 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.
18. 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)*, 2007.

19. 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.
20. 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.
21. 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)**
22. 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.
23. 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.
24. 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.
25. 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.
26. Mian Dong and Lin Zhong, "Challenges to crossbar integration of nanoscale two-terminal symmetric memory devices," in *Proc. IEEE Int. Conf. Nanotechnology*, August 2008.
27. Guangming Hong, Ahmad Rahmati, Ye Wang, and Lin Zhong, "SenseCoding: Acceleration-assisted motion estimation for efficient video encoding," in *Proc. ACM Int. Conf. Multimedia*, October 2008.
28. Ahmad Rahmati\*, Clayton Shepard\*, and Lin Zhong, "NoShake: Content stabilization for shaking screens of mobile devices," in *Proc. IEEE Int. Conf. Pervasive Computing and Communication (PerCom)*, March 2009. (\*Equal contribution)
29. 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)**
30. 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.
31. 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.
32. 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
33. 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.
34. 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.

35. 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 SOSOP, October 2009.
36. 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.
37. Jiayang Liu, Lin Zhong, Jehan Wickramasuriya, and Venu Vasudevan, "User evaluation of light-weight user authentication with a single tri-axis accelerometer," in *Proc. ACM Int. Conf. Human Computer Interaction with Mobile Devices and Services (MobileHCI)*, September 2009.
38. 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.
39. 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.
40. 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
41. 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
42. 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.
43. 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.
44. 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.
45. 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
46. 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.
47. 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
48. 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**)
49. 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.
50. 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.

51. 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**)
52. 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.
53. 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
54. 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.
55. 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.
56. 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.
57. Ahmad Rahmati, Chad Tossell, Clayton Shepard, Phil Kortum, and Lin Zhong, "Exploring iPhone usage: the influence of socioeconomic differences on smartphone adoption, usage and usability," in *Proc. ACM Int. Conf. Human Computer Interaction with Mobile Devices and Services (MobileHCI)*, September 2012.
58. 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.
59. 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.
60. 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**)
61. 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.
62. 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**)
63. 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.
64. 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**)
65. 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.

66. 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.
67. 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.
68. 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.
69. 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.
70. 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.
71. 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.
72. 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.
73. 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.
74. 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.
75. Min Hong Yun, Songtao He, and Lin Zhong, "Reducing latency by eliminating synchrony," in *Proc. the World Wide Web Conference (WWW)*, April 2017.
76. Kevin Boos, Emillio Del Vecchio, and Lin Zhong, "A characterization of state spill in modern operating systems," in *Proc. ACM EuroSys Conference*, April 2017.
77. Kevin Boos and Lin Zhong, "Theseus: a state spill-free operating system," in *Proc. ACM PLOS Workshop*, October 2017.
78. 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.

### **Refereed Journal Articles**

1. Jiong Luo, Lin Zhong, Yungsi 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.
2. 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.
3. Lin Zhong and N. K. Jha, "Interconnect-aware low power high-level synthesis," *IEEE Trans. on Computer-Aided Design of ICs & Systems*, Mar. 2005.
4. K. S. Vallerio, Lin Zhong and N. K. Jha, "Energy-efficient graphical user interface design," *IEEE Trans. on Mobile Computing*, July 2006.

5. 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.
6. Lin Zhong and Niraj K. Jha, "Dynamic power optimization targeting user delays in interactive systems," *IEEE Trans. on Mobile Computing*, November 2006.
7. Jun Yao, Lin Zhong, Douglas Natelson, and James M. Tour, "Etching-dependent reproducible memory switching in vertical SiO<sub>2</sub> structures," in *Applied Physics Letters*, vol. 93, issue 25, 2008
8. 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.
9. Mian Dong and Lin Zhong, "Nanowire crossbar logic and standard cell-based integration," in *IEEE Trans. on Very Large Scale Integration Systems*, August 2009.
10. Ahmad Rahmati and Lin Zhong, "Human-battery interaction on mobile phones," in *Pervasive and Mobile Computing*, vol. 5, no. 5, October 2009.
11. 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.
12. 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.
13. 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<sub>2</sub> substrates," in *Small*, 5 (24), pp. 2910-2915, 2009.
14. Jun Yao, Zhengzong Sun, Lin Zhong, Douglas Natelson, and James Tour, "Resistive switches and memories from silicon oxide," in *ACS Nano Letters*, 2010.
15. 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.
16. 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.
17. Ahmad Rahmati and Lin Zhong, "Context-based network estimation for energy-efficient ubiquitous wireless connectivity," in *IEEE Transactions on Mobile Computing*, January 2011.
18. 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
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. 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.
21. 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.
22. 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.
23. Mian Dong and Lin Zhong, "Chameleon: a color-adaptive web browser for mobile OLED displays," in *IEEE Transactions on Mobile Computing*, May 2012.

24. 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.
25. Hang Yu, Lin Zhong, Ashutosh Sabharwal, "Power Management of MIMO Network Interfaces on Mobile Systems," in *IEEE Trans. VLSI*, July 2012.
26. Mian Dong and Lin Zhong, "Power modeling and optimization of OLED displays," in *IEEE Trans. Mobile Computing*, September 2012.
27. 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.
28. 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.
29. Xiaohan Ma, Mian Dong, Lin Zhong, and Zhigang Deng, "Performance and power consumption characterization of 3D mobile games," in *IEEE Computer*, April 2013.
30. Ahmad Rahmati and Lin Zhong, "Studying smartphone usage: lessons from a four-month field study," in *IEEE Transactions on Mobile Computing*, July 2013.
31. 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.
32. Christopher Hunter, Lin Zhong, and Ashutosh Sabharwal, "Leveraging physical layer cooperation for energy conservation," in *IEEE Transactions on Vehicular Technology*, January 2014.
33. 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.
34. Xiaozhu Lin, Zhen Wang, and Lin Zhong, "K2: A mobile operating system for heterogeneous coherence domains," in *ACM Transactions on Computer Systems*, June 2015.
35. 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.
36. 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.

### ACTIVE FERDERAL 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)



**PAST FEDERAL GRANTS**

- *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*, CNS- 1054693 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, 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

### PROFESSIONAL SERVICES

- Program Committee Co-Chair: WiNTECH 2008, ACM MobiSys 2012, HotPower 2013, IPSN 2014, MCS 2014, ACM APSys 2016.
- Member, Program committees for MobiSys 2007, 2008, 2010-2015, 2017 and 2018; MobiCom 2009, 2012-2015, 2017; HotMobile 2009, 2010, 2012, 2013, and 2015; ASPLOS 2013 and 2014; DSN 2013 and 2014; SigComm 2015; USENIX ATC 2015; SenSys 2013 and 2014; NSDI 2017 and 2018
- Panelist, NSF proposal review panels

### PROFESSIONAL SOCIETIES

IEEE (Senior Member); ACM (Senior Member), Society for Information Display (SID)

### TEACHING

- ELEC513/COMP513: Complexity in modern systems, Spring 2013-2015, 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 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*

Min Hong Yun	PhD student, Rice University
Kevin Boos	PhD student, Rice University
Jian Ding	PhD student, Rice University
Nisal Menuka	PhD student, Rice University
Wenqiu Yu	PhD student, Rice University
Namitha Liyanage	PhD student, Rice University
Ramla Ijaz	PhD student, Rice University

#### *Graduated*

Clayton Shepard (Ph.D. , 2017) (first job: 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)

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)