

Tajana Šimunić Rosing

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INTERESTS energy-efficient computing, embedded systems hardware and software design

PROFESSIONAL EXPERIENCE

05-pres. **UCSD** Full Professor and Fratamico Endowed Chair in the CSE Department; Adjunct Professor in ECE,

08-pres Executive board member of San Diego Supercomputing Center

- leading a diverse research team on projects related to system energy-efficiency:
 - management and optimization of computing systems
 - \$40M JUMP CRISP center focusing on accelerating machine learning workloads
 - head of the Large Scale Systems thrust in MuSyC center; faculty from 11 top USA universities
 - 10 year NSF ERC CIAN; lead of thrust on energy efficient datacenters; 30 companies, 12 universities
 - funded by NSF, DARPA via MARCO-GSRC & FCRP MuSyC, Oracle, CNS, Google, Microsoft, TI, SRC, Cisco, Qualcomm, CEC, Futurewei, Panasonic, Ericson, Broadcom, Intel, IBM.
 - in collaboration with: Google, HP Labs, Oracle, Qualcomm, Broadcom, Cisco, Intel, Texas Instruments, IBM Zurich & TJ Watson, Microsoft, Yahoo, EPFL, ETH, IBM, SDSC, Futurewei, NVidia, AMD.
 - resource management and design of heterogeneous wireless sensor-control-actuator networks
 - director of \$16.3M AI for Healthy Living Center, with faculty from School of Engineering, School of Social Sciences, School of Medicine, Contextual Robotics Institute, Center for Healthy Aging, Center for Microbiome Innovation, Qualcomm Institute & Design Lab
 - \$28M TerraSwarm center; 22 faculty from 10 top institutions in the USA; leading the SmartCities theme
 - led context-aware distributed optimization thrust as a part of ARPA-E NODES grant
 - NSF MetaSense project focused on in-field calibration & NSF CitiSense project focused on mobile air quality sensing; coverage in NY Times and the Wall Street Journal, December 2012
 - funded by DARPA, NSF, NIH, ARPA-E, DOE, LANL, CNS, Intel, IBM, TI, UTC, Raytheon, Oracle, Qualcomm, Panasonic, Huawei, Broadcom, Ericson, Google, Microsoft, and others.
 - In collaboration with: LLNL, LANL, SDG&E, UCSD School of Medicine & Social Sciences, SDSC, University of Bologna, EPFL, ETH, Stanford and other institutions.
- published over 240 publications; got a nomination for one of the best papers in 10 years of DATE, and TODAES journal paper was the top most downloaded paper 2010-2011, received a number of best paper awards and nominations, and numerous invited talks in academia and industry
- led projects as a PI, co-PI or senior personnel totaling more than \$200M
- teaching embedded systems and computer engineering classes

97 – 04 **STANFORD UNIVERSITY & HEWLETT-PACKARD LABS**

- led a team of researchers developing products for wireless media market, interfaced with HP divisions; 5 patents
- obtained project funding for university collaborations and led collaboration at Stanford

93 – 97 **ALTERA CORPORATION**

- patented a new testing methodology for FPLDs that enabled Altera to get to market 4 months sooner
- developed, evaluated and managed simulation and testing for 5 product families

92 – 93 **UNIVERSITY OF ARIZONA**

- design automation of high-speed VLSI interconnects; the simulator has been used by SRC member companies

88 – 92 **NORTHERN ARIZONA UNIVERSITY**

- modeled tether dynamics for orbiting stations to aid in the design of orbiting telescopes; designed an image processing environment for MRIs; designed an award-winning switched capacitor filter for TI

EDUCATION PhD in Electrical Engineering, Stanford University, 2001, 4.0 GPA.

Thesis: *Energy Efficient System Design and Utilization*

MS in Engineering Management, Stanford University, 2000, 4.0 GPA.

MS in Electrical and Computer Engineering, University of Arizona, 1993, 4.0 GPA.

BS in Electrical Engineering, Northern Arizona University, 1992, 4.0 GPA.

JOURNAL PAPERS

1. S. Vikram, A. Collier-Oxandale, M. Osterhout, M. Menarini, C. Chermak, S. Dasgupta, T. S. Rosing, M. Hannigan, W. Griswald, T. S. Rosing, "Evaluating and Improving the Reliability of Gas-Phase Sensor System Calibrations Across New Locations for Ambient Measurements and Personal Exposure Monitoring," *Atmospheric Measurement Techniques Journal*, 2019.
2. M. Imani, J. Morris, H. Shu, S. Li, T. Rosing, "Efficient Associative Search in Brain-Inspired Hyperdimensional Computing", *IEEE Design & Test (D&T)*, 2019.
3. M. Imani, R. Garcia, S. Gupta, T. Rosing, "Hardware-Software Co-design to Accelerate Neural Network Applications", *ACM Journal on Emerging Technologies in Computing (JETC)*, 2019.
4. S. Gupta, M. Imani, T. S. Rosing, "NNPIM: A Processing In-Memory Architecture for Neural Network Acceleration," *IEEE Transaction on Computers*, 2019.
5. Yeseong Kim, Mohsen Imani, and Tajana S. Rosing, "Image Recognition Accelerator Design Using In-Memory Processing," *IEEE MICRO*, 2018.
6. D. Peroni, M. Imani, T. Rosing, "Runtime Efficiency-Accuracy Trade-off Using Configurable Floating Point Multiplier", *IEEE TCAD*, 2018.
7. M. Imani, S. Gupta, S. Sharma, T. Rosing, "NVQuery: Efficient Query Processing in Non-Volatile Memory", *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD)*, 2018.
8. Christine Chan, Alper Sinan Akyurek, Baris Aksanli, and Tajana S. Rosing. "Optimal Performance-Aware Cooling on Enterprise Servers," *IEEE TCAD'18*.
9. A. Sinan Akyurek and Tajana S. Rosing, "Optimal Packet Aggregation in Wireless Networks", *IEEE Transactions on Mobile Computing*, 2018.
10. M. Imani, Shruti Patil, T. Rosing, "Approximate Computing using Multiple-Access Single-Charge Associative Memory" *IEEE Transaction on Emerging Topics in Computing (TETC)*, 2017.
11. M. Imani, D. Peroni, T. Rosing "NVALT: Approximate Lookup Table for GPU Acceleration", *IEEE Embedded System Letter (ESL)*, 2017.
12. M. Imani, A. Rahimi, Hwang, T. S. Rosing, J.M. Rabaey, "Low-Power Sparse Hyperdimensional Encoder for Language Recognition," *IEEE Design & Test*, 2017.
13. M. Imani, A. Rahimi, P. Mercati, T.S. Rosing, "Multi-stage Tunable Approximate Search in Resistive Associative Memory", *IEEE Transactions on Multi-Scale Computing Systems (TMSCS)*, 2017.
14. M. Imani, D. Peroni, A. Rahimi, T.S. Rosing, "Resistive CAM Acceleration for Tunable Approximate Computing", *IEEE Transactions on Emerging Topics in Computing (TETC)*, 2017.
15. B. Aksanli, J. Venkatesh, C. Chan, A. S. Akyurek, T. S. Rosing, "Modular and Personalized Smart Health Application Design in a Smart City Environment," *IEEE Internet of Things Journal*, 2017.
16. B. Aksanli, T. S. Rosing, "User Behavior and Flexibility based Energy Management in Residential Neighborhoods," *Special Issue of IEEE Transactions on Emerging Topics in Computing*, 2017.
17. Jinseok Yang, A. Sinan Akyurek, Sameer Tilak and Tajana S. Rosing, "Design of transmission manager in heterogeneous WSNs", *IEEE Transactions on Emerging Topics in Computing* 2017.
18. A. Sinan Akyurek and Tajana Simunic Rosing, "Optimal Distributed Nonlinear Battery Control", *IEEE Journal of Emerging and Selected Topics in Power Electronics*, 2017.
19. Jagannathan Venkatesh, Baris Aksanli, Christine Chan, Alper S. Akyurek, Tajana S. Rosing, "Scalable Application Design for the Internet of Things", *Special Issue of IEEE Software*, 2017.
20. P. Mercati, F. Paterna, A. Bartolini, L. Benini, T. Simunic Rosing, "WARM: Workload-Aware Reliability Management in Linux/Android," *IEEE TCAD* 2016.
21. M. Imani, Shruti Patil, T. Rosing, "Approximate Computing using Multiple-Access Single-Charge Associative Memory" *IEEE Transaction on Emerging Topics in Computing (IEEE TETC)*, 2016.
22. Mohsen Imani, Shruti Patil, Tajana S. Rosing, "Ultra-low power FinFET based SRAM cell employing sharing current concept", *Microelectronic Reliability Elsevier Journal*, 2015
23. Lucas Wanner, Liangzhen Lai, Abbas Rahimi, Mark Gottscho, Pietro Mercati, Chu-Hsiang Huang, Frederic Sala, Yuvraj Agarwal, Lara Dolecek, Nikil Dutt, Puneet Gupta, Rajesh Gupta, Ranjit Jhala, Rakesh Kumar, Sorin Lerner, Subhasish Mitra, Alexandru Nicolau, Tajana Simunic Rosing, Mani B Srivastava, Steve Swanson, Dennis Sylvester, Yuanyuan Zhou. "NSF Expedition of Variability-Aware Software:Recent Results and Contributions", *Information Technology, Special Issue on Dependable Embedded Systems*, 57(3), 2015, pp. 181-198., 2015.

24. E.A. Lee, J. Rabaey, D. Blaauw, P. Dutta, K. Fu, C. Guestrin, B. Hartmann, R. Jafari, D. Jones, J. Kubiatowicz, V. Kumar, R. Mangharam, R. Murray, G. Pappas, K. Pister, A. Rowe, A. Sangiovanni-Vincentelli, S.A. Seshia, T. Simunic Rosing, B. Taskar, J. Wawrzynek, D. Wessel, "The Swarm at the Edge of the Cloud", IEEE Design & Test, 2014.
25. R. Ayoub, R. Nath, T. Simunic Rosing, "CoMETC: Coordinated Management of Energy, Thermal, & Cooling in Servers" TODAES'13.
26. A. Kahng, S. Kang, T. Simunic Rosing, R. Strong, "Many-Core Token-Based Adaptive Power Gating," IEEE TCAD'13.
27. P. Aghera, J. Yang, P. Zappi, D. Krishnaswamy, A. Coskun, and T. Simunic Rosing, "Energy Management in Wireless Mobile Systems Using Dynamic Task Assignment," JOLPE'13.
28. S. Sharifi, T. Simunic Rosing, "PROMETHEUS: A Proactive Method for Thermal Management of Heterogeneous MPSoCs," IEEE TCAD'13.
29. P. Gupta, Y. Agarwal, L. Dolecek, N. Dutt, R. K. Gupta, R. Kumar, S. Mitra, A. Nicolau, T. Simunic Rosing, M. B. Srivastava, S. Swanson, D. Sylvester: "Underdesigned and Opportunistic Computing in Presence of Hardware Variability," IEEE TCAD'13.
30. B. Aksanli, J. Venkatesh, T. Simunic Rosing, "Datacenter Modeling and Simulation with Focus on Energy Efficiency and Green Energy Integration," IEEE Computer Special Issue on Modeling and Simulation of Smart and Green Computing Systems, 2012.
31. Mohamed M. Sabry, Ayse K. Coskun, David Atienza, Tajana Simunic Rosing, Thomas Brunschwiler, "Energy-Efficient Multi-Objective Thermal Control for Liquid-Cooled 3D Stacked Architectures," IEEE TCAD, 2011.
32. R. Ayoub, K. Indukuri, T. Simunic Rosing, "Temperature Aware Dynamic Workload Scheduling in Multisocket CPU Servers," IEEE TCAD, 2011.
33. E. Regini, D. Lim, T. Simunic Rosing, "Energy management in heterogeneous wireless sensor networks," JOLPE, 2011.
34. G. Dhiman, G. Marchetti, T. Simunic Rosing, "vGreen: A System for Energy Efficient Management of Virtualized Environments," Special Issue of ACM TODAES, 2010. **Top most downloaded paper '10-'11**
35. J. Recas, C. B, T. Simunic Rosing, D. Atienza, "HOLLOWS: A Power-aware Task Scheduler for Energy Harvesting Sensor Nodes", Journal of Intelligent Material Systems and Structures, 2010.
36. S. Sharifi, T. Simunic Rosing, "Accurate direct and indirect on-chip temperature sensing for efficient dynamic thermal management," IEEE TCAD, 2010.
37. A. Coskun, T. Simunic Rosing, "Utilizing Predictors for Efficient Thermal Management in Multiprocessor SoCs," IEEE TCAD, 2009.
38. G. Dhiman, T. Simunic Rosing, "Using online learning for system level power management," IEEE TCAD, 2009.
39. A. Coskun, T. Simunic Rosing, K. Whisnant, K. Gross, "Static and dynamic temperature-aware scheduling for multiprocessor SoCs," IEEE TVLSI, 2008.
40. T. Simunic Rosing, K. Mihic, G. De Micheli, "Power and reliability management of SOCs," IEEE Transactions on VLSI, 2007.
41. G. Park, T. Simunic Rosing, M. Todd, C. Farrar, W. Hodgkiss, "Energy Harvesting for Structural Health Monitoring in Sensor Networks," ASCE Journal, 2007.
42. A. Coskun, T. Simunic Rosing, K. Mihic, G. De Micheli, Y. Leblebici, "Analysis and Optimization of MPSoC Reliability," Invited paper to Journal of Low-Power Electronics, April 2006.
43. T. Simunic, S. Boyd, P. Glynn: "Managing Power Consumption in Networks on Chips," IEEE Transactions on VLSI, pp. 96- 107, Jan 2004.
44. A. Acquaviva, T. Simunic, V. Deolalikar, S. Roy: "Remote Power Control of Wireless Network Interfaces", Special Issue of Journal of Embedded Computing, No. 3, 2004.
45. B. Delaney, T. Simunic, N. Jayant: "Power Aware Distributed Speech Recognition for Wireless Mobile Devices," Special Issue on Embedded Systems for Multimedia, IEEE Design & Test, 2004.
46. A. Peymandoust, T. Simunic, G. De Micheli: "Complex Instruction and Software Library Mapping for Embedded Software Using Symbolic Algebra," Special Issue of IEEE Transactions on CAD, pp.964-975, August 2003.
47. T. Simunic, L. Benini, P. Glynn, G. De Micheli: "Event-Driven Power Management", IEEE Transactions on CAD, pp.840-857, July 2001.
48. T. Simunic, M. Smith: "Dynamic Power Management at HP", Invited Paper in Special Issue of Design and Test Journal, 2001.

49. T. Simunic, L. Benini, G. De Micheli: "Energy-Efficient Design of Battery-Powered Embedded Systems", Special Issue of IEEE Transactions on VLSI, 2001.
50. T. Simunic, J. Rozenblit, J. Brews: "VLSI Interconnect Design Automation Using Qualitative and Symbolic Techniques"; IEEE Transactions on Components, Packaging, and Manufacturing Technology Part B: Advanced Packaging, 1996.

CONFERENCE PAPERS

1. Mohsen Imani, Saransh Gupta, Yeseong Kim, and Tajana S. Rosing, "FloatPIM: In-Memory Acceleration of Deep Neural Network Training with High Precision", IEEE International Symposium on Computer Architecture (ISCA), 2019
2. Mohsen Imani, Yeseong Kim, Sadegh Riyazi, John Merssely, Patrick Liu, Farinaz Koushanfar, and Tajana S. Rosing, "A Framework for Collaborative Learning in Secure High-Dimensional Space", IEEE Cloud Computing (CLOUD), 2019
3. Mohsen Imani, Yeseong Kim, Thomas Worley, Sarangh Gupta, and Tajana S. Rosing, "[HDCluster: An Accurate Clustering Using Brain-Inspired High-Dimensional Computing](#)", IEEE/ACM Design Automation and Test in Europe Conference (DATE), 2019
4. Mohsen Imani, John Merssely, Fan Wu, Wang Pi, and Tajana S. Rosing, "[A Binary Learning Framework for Hyperdimensional Computing](#)", IEEE/ACM Design Automation and Test in Europe Conference (DATE), 2019
5. Mohsen Imani, Ricardo Garcia, Andrew Huang, and Tajana S. Rosing, "[CADE: Configurable Approximate Divider for Energy Efficiency](#)", IEEE/ACM Design Automation and Test in Europe Conference (DATE), 2019
6. Xiao Liu, Minxuan Zhou, Tajana Rosing, and Jishen Zhao, "HR3AM: A Heat Resilient Design for RRAM-based Neuromorphic Computing", IEEE/ACM International Symposium on Low Power Electronics and Design (ISLPED), 2019
7. Minxuan Zhou, Mohsen Imani, Saransh Gupta, Yeseong Kim, and Tajana Rosing, "[Thermal-Aware Design and Management for Search-based In-Memory Acceleration](#)", IEEE/ACM Design Automation Conference (DAC), 2019
8. Mohsen Imani, Tarek Nassar, Tajana Rosing, "[Moving Toward Real-Time Diagnostics using Brain-Inspired Hyperdimensional Computing](#)", AACR conference on Artificial Intelligence, Big Data, and Prediction in Cancer
9. Mohsen Imani, Tarek Nassar, Justin Morris, Tajana Rosing, "DNA Sequencing using Brain-inspired Hyperdimensional Computing", GOMACTech Conference, 2019
10. Mohsen Imani, Yeseong Kim, Saransh Gupta, Daniel Peroni, and Tajana S. Rosing, "In-Memory Acceleration of Deep Neural Network", GOMACTech Conference, 2019
11. Mohsen Imani, Tarek Nassar, Tajana Rosing, "Brain-Inspired Hyperdimensional Computing for Real-Time Health Analysis", IEEE International Conference on Biomedical and Health Informatics (BHI), 2019
12. Mohsen Imani, Saransh Gupta, Yeseong Kim, Minxuan Zhou, and Tajana S. Rosing, "[DigitalPIM: Digital-based Processing In-Memory for Big Data Acceleration](#)", ACM Great lakes symposium on VLSI (GLSVLSI), 2019
13. Saransh Gupta, Mohsen Imani, and Tajana Rosing, "[Exploring Processing In-Memory for Different Technologies](#)", ACM Great lakes symposium on VLSI (GLSVLSI), 2019
14. Anthony Thomas, Yunhui Guo, Yeseong Kim, Baris Aksanli, Arun Kumar, and Tajana Rosing, "[Hierarchical and Distributed Machine Learning Inference Beyond the Edge](#)", IEEE International Conference on Networking, Sensing and Control (ICNSC)
15. Daniel Peroni, Mohsen Imani, Hamid Nejatollahi, Nikil Dutt, and Tajana S. Rosing, "ARGA: Approximate Reuse for GPGPU Acceleration", IEEE/ACM Design Automation Conference (DAC), 2019
16. Mohsen Imani, Alice Sokolova, Ricardo Garcia, Andrew Huang, Fan Wu, and Tajana S. Rosing, "ApproxLP: Approximate Multiplication with Linearization and Iterative Error Control", IEEE/ACM Design Automation Conference (DAC), 2019
17. Mohsen Imani, Justin Morris, John Merssely, Helen Shu, Yaobang Deng, and Tajana S. Rosing, "BRIC: Locality-based Encoding for Energy-Efficient Brain-Inspired Hyperdimensional Computing", IEEE/ACM Design Automation Conference (DAC), 2019
18. Mohsen Imani, Sahand Salamat, Saransh Gupta, Jiani Huang, and Tajana S. Rosing, "[FACH: FPGA-based Acceleration of Hyperdimensional Computing by Reducing Computational Complexity](#)", IEEE Asia and South Pacific Design Automation Conference (ASP-DAC), 2019

19. Michael H Ostertag, Nikolay Atanasov, Tajana Simunic Rosing, "Robust Velocity Control for Minimum Steady State Uncertainty in Persistent Monitoring Applications", 2019 Annual American Controls Conference (ACC), 2019
20. Saransh Gupta, Mohsen Imani, Behnam Khaleghi, Venkatesh Kumar, and Tajana S. Rosing, "RAPID: A ReRAM Processing in Memory Architecture for DNA Sequence Alignment", International Symposium on Low Power Electronics and Design (ISLPED), 2019
21. Mohsen Imani, Sahand Salamat, Behnam Khaleghi, Mohammad Samragh, Farinaz Koushanfar, and Tajana S. Rosing, "[SparseHD: Algorithm-Hardware Co-Optimization for Efficient High-Dimensional Computing](#)", International Symposium on Field-Programmable Custom Computing Machines (FCCM), 2019
22. Sahand Salamat, Mohsen Imani, Behnam Khaleghi, and Tajana S. Rosing, "[F5-HD: Fast Flexible FPGA-based Framework for Refreshing Hyperdimensional Computing](#)", ACM/SIGDA International Symposium on Field-Programmable Gate Arrays (FPGA), 2019
23. Behnam Khaleghi and Tajana S. Rosing, "[Thermal-Aware Design and Flow for FPGA Performance Improvement](#)", IEEE/ACM Design Automation and Test in Europe Conference (DATE), 2019
24. Yunhui Guo, Honghui Shi, Abhishek Kumar, Kristen Grauman, Tajana Rosing, Rogério Schmidt Feris, "[SpotTune: Transfer Learning through Adaptive Fine-tuning](#)", In Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2019
25. Yunhui Guo, Yandong Li, Liqiang Wang, Tajana Rosing, "[Depthwise Convolution is All You Need for Learning Multiple Visual Domains](#)", The Thirty-Third AAAI Conference on Artificial Intelligence (AAAI), 2019
26. Joonseop Sim, Saransh Gupta, Mohsen Imani, Yeseong Kim, and Tajana S. Rosing, "[UPIM : Unipolar Switching Logic for High Density Processing-in-Memory Applications](#)", ACM Great lakes symposium on VLSI (GLSVLSI), 2019
27. Yeseong Kim, Ankit More, Emily Shriver, and Tajana S. Rosing, "[Application Performance Prediction and Optimization Under Cache Allocation Technology](#)", IEEE/ACM Design Automation and Test in Europe Conference (DATE), 2019
28. Joonseop Sim, Minsu Kim, Yeseong Kim, Saransh Gupta, Behnam Khaleghi and Tajana Rosing, "[MAPIM: Mat Parallelism for High Performance Processing in Non-volatile Memory Architecture](#)", IEEE International Symposium on Quality Electronic Design (ISQED), 2019
29. Daniel Peroni, Mohsen Imani, Tajana Rosing, "[ALook: Adaptive Lookup for GPGPU Acceleration](#)", IEEE Asia and South Pacific Design Automation Conference (ASP-DAC), 2019
30. Minxuan Zhou, Mohsen Imani, Saransh Gupta, Tajana Rosing, "[GRAM: Graph Processing in a ReRAM-based Computational Memory](#)", IEEE Asia and South Pacific Design Automation Conference (ASP-DAC), 2019
31. Mohsen Imani, Sahand Salamat, Jiani Huang, Saransh Gupta, Tajana Rosing, "[FACH: FPGA-based Acceleration of Hyperdimensional Computing by Reducing Computational Complexity](#)", IEEE Asia and South Pacific Design Automation Conference (ASP-DAC), 2019
32. Joonseop Sim, Mohsen Imani, Woojin Choi, Yeseong Kim, Tajana Rosing, "LUPIS: Latch-Up Based Ultra Efficient Processing-in-Memory System", IEEE International Symposium on Quality Electronic Design (ISQED), 2018.
33. Minxuan Zhou, Mohsen Imani, Saransh Gupta, and Tajana Rosing, "GAS: A Heterogeneous Memory Architecture for Graph Processing," ISLPED '18.
34. M. Imani, Y. Kim, T. Rosing, "Visual Object Recognition Accelerator Based on Approximate In-Memory Processing", Non-Volatile Memory Workshop (NVMW), 2018.
35. M. Imani, A. Rahimi, D. Kong, T. Rosing, Jan Rabaey, "Non-Volatile Associative Memory to Accelerate Brain-inspired Hyperdimensional Computing" Non-Volatile Memory Workshop (NVMW), 2018 .
36. M. Imani, S. Gupta, T. Rosing, "Accelerating Multiplication and Parallelizing Operations in Non-Volatile Memory" Non-Volatile Memory Workshop (NVMW), 2018.
37. M. Imani, C. Huang , D. Kong, T. Rosing, "Hierarchical Hyperdimensional Computing for Energy Efficient Classification", IEEE/ACM Design Automation Conference (DAC), 2018.
38. M. Imani, R. Garcia , S. Gupta, T. Rosing, "Configurable Floating Point Multiplier for Approximate Computing", IEEE/ACM Design Automation Conference (DAC), 2018.
39. S. Gupta, M. Imani, T. Rosing, "Processing In-Memory Architecture for Multiple Memory Technology", IEEE/ACM Design Automation Conference (DAC), 2018.
40. M. Imani, R. Garcia, S. Gupta, T. Rosing "RMAC: Runtime Configurable Floating Point Multiplier for Approximate Computing", IEEE/ACM International Symposium on Low Power Electronics and Design (ISLPED), 2018.

41. M. Zhou, M. Imani, S. Gupta, T. Rosing “GAS: A Heterogeneous Memory Acceleration for Graph Processing”, IEEE/ACM International Symposium on Low Power Electronics and Design (ISLPED), 2018.
42. M. Imani, S. Gupta, T. Rosing, “GenPIM: Generalized Processing In-Memory to Accelerate Data Intensive Applications”, IEEE/ACM Design Automation and Test in Europe Conference (DATE), 2018.
43. S. Gupta, M. Imani, T. Rosing, "FELIX: Fast and Energy-Efficient Logic in Memory" IEEE/ACM International Conference On Computer Aided Design (ICCAD), 2018.
44. M. Imani, Y. Kim, T. Rosing, "Brain-Inspired Hyperdimensional Computing: An Efficient Classifier for Embedded Devices" IEEE/ACM International Conference On Computer Aided Design (ICCAD), 2018.
45. Y. Kim, M. Imani, T. Rosing, “Efficient Human Activity Recognition Using Hyperdimensional Computing”, IEEE Conference on Internet of Things (IoT), 2018.
46. J.Sim, M. Imani, W. Choi, Y. Kim, T. Rosing, “LUPIS : Latch-Up Based Ultra Efficient Processing In-Memory System”, IEEE International Symposium on Quality Electronic Design (ISQED), 2018. (Best paper nomination).
47. M. Imani, M. Masich, D. Peroni, P. Wang, T. Rosing, “CANNA: Neural Network Acceleration using Configurable Approximation on GPGPU”, IEEE Asia and South Pacific Design Automation Conference (ASP-DAC), 2018.
48. M. Imani, D. Peroni, T. Rosing, “Resistive Content Addressable Memory for Configurable Approximation”, GOMACTech Conference, 2018.
49. M. Imani, M. Masich, T. Rosing, “Training Acceleration of Deep Neural Network on Configurable GPGPU” Techon SRC Conference, 2018 .
50. M. Imani, T. Nassar, T. Rosing, “Moving Toward Real-Time Diagnostics using Brain-Inspired Hyperdimensional Computing”, AACR conference on Artificial Intelligence, Big Data, and Prediction in Cancer, 2018.
51. S. Salamat, M. Imani, S. Gupta, T. Rosing, "RNSnet: In-Memory Neural Network Acceleration Using Residue Number System" IEEE International Conference on Rebooting Computing (ICRC), 2018.
52. M. Imani, D. Peroni, T. Rosing, “Program Acceleration Using Nearest Distance Associative Search”, IEEE International Symposium on Quality Electronic Design (ISQED), 2018.
53. Anthony Thomas, Yunhui Guo, Yeseong Kim, Baris Aksanli, Arun Kumar, Tajana S. Rosing. “Hierarchical and Distributed Machine Learning Inference Beyond the Edge.” In Government Microcircuit Applications & Critical Technology Conference (GOMACTech), 2018.
54. Y. Kim, A. Moore, E. Shriver, T. S. Rosing, “P4: Phase-Based Power/Performance Prediction of Heterogeneous Systems via Neural Networks,” ICCAD’17.
55. P. Mercati. R. Ayoub, E. Samson, F. Paterna, M. Beuchat, M. Kisnevsky, T. S. Rosing, “Multi-variable Dynamic Power Management for the GPU Subsystem,” DAC’17.
56. C. Chan, M. Ostertag, A. S. Akyurek, T. S. Rosing. “Context-Aware System Design,” Invited paper to SPIE 2017.
57. B. Aksanli, J. Venkatesh, C. Chan, A. S. Akyurek, T. S. Rosing, “Context-Aware and User-Centric Residential Energy Management,” PerIoT, 2017.
58. N. Mousavi, B. Aksanli, A. S. Akyurek, T. S. Rosing, “Accuracy-Resource Tradeoff for Edge Devices in Internet of Things,” SmartEdge 2017.
59. W. Cui, Y. Kim, T. S. Rosing, “Cross-Platform Machine Learning Characterization for Task Allocation in IoT Ecosystems,” **Best paper award**, IEEE CCWC, 2017.
60. M. Imani, A. Rahimi, D. Kong, T. Rosing, J. M. Rabaey “Exploring Hyperdimensional Associative Memory”, HPCA’17.
61. M. Imani, S. Gupta, T. Rosing “Ultra-Efficient Processing In-Memory for Data Intensive Applications”, DAC’17.
62. M. Imani, D. Peroni, T. Rosing “CFPU: Configurable Floating Point Multiplier for Energy-Efficient Computing”, DAC’17 (Best poster at UCSD’s ResearchExpo).
63. Y. Kim, M. Imani, T. Rosing “ORCHARD: Visual Object Recognition Accelerator Based on Approximate In-Memory Processing”, ICCAD’17.
64. Mohsen Imani, Yeseong Kim, and Tajana S. Rosing, "Brain-Inspired Hyperdimensional Computing: An Efficient Classifier for Embedded Devices," ICCAD’17.
65. M. Imani, A. Rahimi, D. Kong, T. Rosing, J. M. Rabaey “Hardware Acceleration of Brain-inspired Hyperdimensional Computing”, ICCAD VMC 2017.
66. M. Imani, D. Peroni, Y. Kim, A. Rahimi and T. Rosing, "Efficient Neural Network Acceleration on GPGPU using Content Addressable Memory," DATE’17.
67. M. Samragh, M. Imani, F. Koushanfar and T. Rosing, "LookNN: Neural Network with No Multiplication," DATE’17.

68. M. Imani, S. Gupta, A. Arredondo, T. Rosing “Efficient Query Processing in Crossbar Memory”, ISLPED’ 17.
69. M. Imani, Y. Kim, T. Rosing, “MPIM: Multi-Purpose In-Memory Processing using Configurable Resistive Memory” ASP-DAC’ 17.
70. M. Imani, D. Kong, A. Rahimi, T. Rosing, “VoiceHD: Hyperdimensional Computing for Efficient Speech Recognition”, ICRC’ 17.
71. M. Imani, Y. Kim, T. Rosing “NNgine: Ultra-Efficient Nearest Neighbor Accelerator Based on In-Memory Computing”, ICRC’ 17.
72. J. Sim, M. Imani, Y. Kim, T. Rosing “Enabling Efficient System Design Using Vertical Nanowire Transistor Current Mode Logic”, VLSI-SoC’ 17.
73. M. Imani, D. Kong, A. Rahimi and T. Rosing, Jan Rabaey, "Brain-Inspired Hyperdimensional Computing: Robust, Scalable and Energy Efficient Classifier," Techcon’ 17.
74. Y. Kim, M. Imani and T. Rosing, "General-Purpose Online Classification Accelerator via In-Memory Computing," Techon’ 17.
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228. Y. Lu, E. Chung, T. Simunic, L. Benini, G. De Micheli: “Quantitative Comparison of Power Management Algorithms”, pp.20-26, DATE’00, Selected for publication in *The Most Influential Papers of 10 Years DATE*, Edited by Lauwereins, Rudy; Madsen, Jan, 2008.
229. T. Simunic, L. Benini, G. De Micheli: “Event-driven Power Management of Portable Systems”, ISSS’99.
230. T. Simunic, L. Benini, G. De Micheli: “Energy-efficient design of Battery-Powered Embedded Systems”, ISLPED’99.
231. T. Simunic, L. Benini, G. De Micheli: “Cycle-Accurate Simulation of Energy Consumption in Embedded Systems”, DAC’99.
232. Y. Lu, T. Simunic, G. De Micheli: “Software Controlled Power Management”, CODES’99.
233. J. Rozenblit, T. Simunic: “Techniques for Intelligent VLSI Interconnect Design,” DMC’94.
234. T. Simunic, J. Rozenblit: “Reduction of Signal Delay and Crosstalk in Electronic Packaging,” EPEP’93.
235. T. Simunic, P. Hsu, J. Rozenblit, C. Wolff, J. Prince, A. Cangellaris: “An Integrated Framework for Modeling and Simulation of Electronic Packaging,” TECHCON’93

BOOK CHAPTERS

1. S. Patil, Y. Kim, K. Korgaonkar, I. Awwal, T. S. Rosing, “Characterization of User’s Behavior Variations for Design of Replayable Mobile Workloads,” in *Mobile Computing, Applications, and Services*, Volume 162 of the series *Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering*, pp 51-71, January, 2016.
2. Baris Aksanli, Jagannathan Venkatesh, Inder Monga, and Tajana Rosing, “Renewable Energy Prediction for Improved Utilization and Efficiency in Datacenters and Backbone Networks,” *Computational Sustainability Springer Book Chapter*, 2015.
3. Ayse K. Coskun, J. Ayala, D. Atienza, T. Simunic Rosing: “Thermal Modeling and Management of Liquid-Cooled 3D Stacked Architectures,” Editors: J. Becker, M. Johann and R. Reis. Springer, *VLSI-SoC: Technologies for Systems Integration* (ISBN: 978-3-642-23119-3), p. 34-55, 2011.
4. G. Dhiman, R. Ayoub, T. Simunic Rosing, “Energy and Thermally Aware Scheduling in Datacenters,” in *Energy-Efficient Distributed Computing*, Edited by Albert Zomaya & Young Choon Lee , Wiley-Interscience 2010.
5. N. Nikzad, P. Aghera, P. Zappi, T. Simunic Rosing, “Energy Management in Heterogeneous Wireless Healthcare Networks,” in *Energy-Efficient Distributed Computing*, Edited by Albert Zomaya & Young Choon Lee, Wiley-Interscience 2010.
6. Ayse K. Coskun, J. Ayala, D. Atienza, T. Simunic Rosing. *Thermal Modeling and Management of Liquid-Cooled 3D Stacked Architectures*. Editors: J. Becker, M. Johann and R. Reis. Springer, *VLSI-SoC: Technologies for Systems Integration* (ISBN: 978-3-642-23119-3), p. 34-55, 2011.
7. Y. Lu, E. Chung, T. Simunic, L. Benini, G. De Micheli: “Quantitative Comparison of Power Management Algorithms”, in *The Most Influential Papers of 10 Years DATE*, Edited by Lauwereins, Rudy; Madsen, Jan, Springer-Verlag, 2008.
8. J. Kim, T. Simunic Rosing, “Power-aware resource management techniques for low-power embedded systems,” in *Handbook of Real-Time and Embedded Systems*, Edited by S. H. Son, I. Lee, J. Y-T Leung, Taylor-Francis Group LLC, 2006.
9. T. Simunic: “Dynamic Management of Power Consumption” in *Power Aware Computing*, Edited by R. Graybill, R. Mehlem, Kluwer Academic Publishers pp.102-125, 2002.

PATENTS

1. T. Simunic Rosing, “Device and method for identifying a communication interface that performs an operating parameter closer to a desired performance level than another communication interface performs the operating parameter,” US7246181B2, Priority date 2004-09-14.

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2. V. Deolalikar, T. Simunic: "Method and system for power control in wireless portable devices using wireless channel characteristics", US20050170801A1, Priority date 2004-01-30.
3. T. Simunic, O. Celebican: "Arrangement and method of estimating and optimizing energy consumption of a system including I/O devices," US20050171753A1, Priority date 2004-01-30.
4. T. Simunic, A. Acquaviva, L. Benini, "Application-driven method and apparatus for limiting power consumption in a processor-controlled hardware platform," US7272730B1, Priority date 2003-07-31.
5. T. Simunic, N. Mehta, C. Crome : "Method and Device for Test Vector Analysis"; US6197605B1, Priority date 1996-04-10.

THESES (supervised & published)

1. J. Sim, "Architecting Non-volatile Memory for High Bandwidth Systems," 2019.
2. D. Peroni, "Approximate Computing for GPGPU Acceleration," PhD, 2019.
3. C. Chan, "Context-aware Platform Design and Optimization," PhD, 2017.
4. A. S. Akyurek, "Optimized Energy Control in Power Distribution Systems," PhD, 2017.
5. P. Mercati, "Power, Thermal, Reliability and Variability Management of Mobile Devices," PhD, 2016.
6. J. Venkatesh, "A Context-aware Approach for Automation of End-User Elements in the Smart Grid," PhD, 2016.
7. J. Yang, "Energy Efficient Data Aggregation in Sensor Networks," PhD, 2015.
8. B. Aksanli, "Energy and Cost Efficient Datacenters," PhD, 2015.
9. R. Strong, "Low-Latency Techniques for Improving System Energy Efficiency," PhD, 2013.
10. V. Kontorinis, "Adaptive Architectures for Peak Power Management," PhD, 2013.
11. S. Sharifi, "Accurate Temperature Sensing and Efficient Dynamic Thermal Management in MPSoCs," PhD, 2011.
12. R. Ayoub, "Temperature and Cooling Management in Computing Systems," PhD, 2011.
13. G. Dhiman, "Dynamic Workload Characterization for Energy Efficient Computing," PhD, 2011.
14. R. Herrmann, "Context based energy management for sensing applications," MS, 2011.
15. A. K. Coskun, "Efficient Thermal Management for Multiprocessor Systems," PhD 2009.
16. E. Regini, "Resource management in heterogeneous wireless sensor networks," MS 2009.
17. J. Steck, "Energy and task management in energy harvesting wireless sensor networks for structural health monitoring," MS 2009.
18. C. Bergonzini, "Management of solar harvested energy in actuation based embedded systems," MS 2009.
19. D. Lim, "Distributed proxy-layer scheduling in heterogeneous wireless networks," MS 2007.
20. D. Musiani, "Design of an active sensing platform for wireless structural health monitoring," MS 2007.
21. T. Simunic, "Energy efficient system design and utilization," PhD 2001.
22. T. Simunic, "VLSI interconnect design automation using qualitative and quantitative techniques," MS 1993.

ACADEMIC COMMUNITY SERVICE

- IEEE CEDA Kuh Early Career Award Committee 2018, 2019
- Distinguished speaker UC Riverside, 2019.
- Distinguished speaker UC Irvine 2019
- TPC track chair, DATE, 2019-2020
- DAC women in EDA invited panel speaker, 2019
- JUMP CBRIC invited speaker, 2019
- JUMP ADA Invited speaker, 2019
- DARPA ERI Invited speaker, 2019
- ICCAD TPC member, 2019
- DATE women in EDA invited panel speaker 2018
- Keynote speaker at IEEE/ACM Workshop on Variability Modeling and Characterization, 2018
- Keynote speaker at IEEE Reliability Symposium 2018
- GLOBECOMM 2015 Executive committee member, Tutorials Chair
- Invited speaker at WIC Panel, 2015.
- ISCC'2013 chair of the TPC executive committee
- DATE 2011-2012, 2012-2013 TPC Track Chair
- ISLPED 2012 TPC Track Chair

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- DAC 2013 WIP Chair, ESS Chair
- Associate Editor for IEEE Transactions on Mobile Computing 2008-2012
- Associate Editor for IEEE Transactions on Circuits and Systems 2003-2005
- Invited speaker at WEED-ESSA panel on "Cross-stack Energy-optimization - Fact or Fiction?" on June 9th at ISCA, Portland.
- CRA-W workshop presentations
- Session chair for DATE, ISLPED, DAC, ICCAD
- Technical paper committee for many conferences, such as DAC, DATE, ASPLOS, IPSN, ICCAD, ISLPED, ISCA, MMCN, HotPower, SECON.
- Reviewer for a number of publications ranging from Proceedings of the IEEE, to IEEE Transactions on Computers, IEEE Transactions on VLSI, IEEE Transactions on CAD, IEEE Transactions on Mobile Computing, IEEE Computer, IEEE Transactions on Computers, IEEE Micro, ACM TECS, ACM TODAES, ACM TOSN, and conferences such as DATE, DAC, ISLPED, ICCAD, IPSN and many others
- Technical reviewer for Alfred Sloan Grant & Dutch Ministry of Economic Affairs, Estonian NSF

UNIVERSITY SERVICE

- Ad-hoc committee for an endowed chair appointment in CSE, 2019.
- JSOE Dean's Faculty Council, 2019-pres.
- Member of UCSD Committee on Committees 2019-pres.
- HDSI Faculty Member of Clusters on Data Science Theory, Methods and Tools; Cross-cutting areas and systems, Improving Quality of Life, and Enabling Scientific Discovery 2018-pres.
- Dean Pisano Performance Review Committee CSE Representative 2018
- Ad-hoc committee for two endowed chair appointments in SOE, 2018.
- LPSOE recruiting committee, 2017-2019
- SP-SOC committee member 2018-pres.
- Co-creator of Jean Ferrante diversity scholarship (with Arun Kumar) 2018
- School of Engineering Building Committee 2015-2018
- UCSD Undergraduate Council Member 2016-2018
- Precision Medicine SOE recruit committee, 2017-2018
- Chair of Undergraduate Council's Department of Math Review Committee, 2017.
- Chair of Undergraduate Council's Department of Religion Review Committee, 2018.
- Director for \$10M UCSD-IBM AI for Healthy Living Center, 2017-2018.
- Diversity Coordinator for CSE Department. 2016 - Present
- IDEA Center Board Member, 2017-pres.
- University Faculty Recruitments for Sensors, Devices, and Imaging Committee, 2017-18.
- Mental Health & Technology Center executive board faculty member, 2017-pres.
- Qualcomm Institute (CalIT2) ORU Review, 2017.
- Featured Speaker at the UCSD's Founder's Symposium, "An Evening of Nonconventional Wisdom: AI for Healthy Aging," 2017.
- Teaching faculty recruit committee, 2017-pres.
- Board member, IDEA Center, 2017-pres.
- Diversity coordinator for CSE Department, 2017-pres.
- Dean review committee 2018
- Triton Drone Racing club faculty advisor 2016-2018
- UCSD Undergraduate Council Member 2016-2018
- Involved in 10 UCSD Centers: Center for Contextual Robotics, Center for Wearable Sensors, Center for Energy Research, Center for Networked Systems, Center for Wireless and Population Health Systems, Sustainable Power and Energy Center, San Diego Supercomputing Center, Qualcomm Institute
- University Diversity in Precision Medicine Faculty Recruitments for Sensors, Devices, and Imaging Committee, 2015-16
- Eastern Europe Outreach 2015-2016

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- School of Engineering Building Committee 2015-2016
- MS comprehensive exam planning committee 2015
- MS project review 2015, 2016
- CSE PhD admission committee 2014-2016
- MAS AESE Program Review 2014-2015
- Graduate students' committee 2012-2014
- Executive board member of San Diego Supercomputing Center 2008-pres.
- University energy initiatives committee, 2012-2013
- JSOE energy faculty search committee, 2012-2013
- Graduate students committee (gradcom) 2012-2013
- Member of the search committee for SDSC director 2009-pres.
- Engineering Wide Initiatives Committee, 2008-09
- Faculty Advisor, Women in Computing, 2005 – pres.
- Calit2 System-on-a-Chip Committee, Chair, 2005 – 06
- Faculty Recruiting Committee, 2005 – 06
- Computer Engineering Program Committee, 2005 – 08
- Masters Students Admissions and Affairs Committee, 2005 – 09
- Computer Engineering Space Committee, Chair, 2005 – 09

TEACHING EXPERIENCE

Fall 05 – pres.

UCSD – Full professor

- taught an undergraduate class in logic circuit design (CSE 140); 95% of students said they recommend me as an instructor; 2005-pres.
- designed, got funding and set up a brand new graduate level class and lab in embedded systems (CSE237a); 98% of students said they recommend me as instructor for the class; 2005-pres.
- developed a new course on SmartGrid that attracted students, researchers and faculty across CSE, ECE, mechanical engineering, nano engineering and structural engineering departments, 2015.
- Designed and taught a new course on Internet of Things, 2016.
- Designed and taught new courses on Emerging Computing, and SW for Acceleration, 2018.
- Taught a new course on Hardware acceleration for bioinformatics workloads, 2019
- Designed and taught an embedded systems class that is a part of new Master of Advanced Studies program in Wireless and Embedded Systems at UCSD

Winter 02

STANFORD UNIVERSITY – lecturer

- taught a graduate course on Logic Synthesis of VLSI Circuits; lead a team of TAs and graders

HONORS & AWARDS

- IEEE Fellow, 2018
- Awarded John J. and Susan M. Fratamico Endowed Chair in CSE Department, 2014.
- Keynote at IEEE International High-Level Design Validation and Test, “Reliability and Maintainability of IoT systems,” 2017.
- UCSD Sustainability Award for the Postdoc in my group, 2016.
- FISP Award 2015.
- UCSD Research Expo Best poster awards, 2010, 2012 (two honorable mention), 2013 (two honorable mention).
- Von Liebig Entrepreneurism Center Innovation Award in Information Technology for “SOPRA – A Proactive Service Oriented Self-Adaptive Framework for Data Center Resource Optimization,” 2013
- CitiSense project covered in the NY Times and the Wall Street Journal, December 2012
- TODAES journal paper is the top most downloaded paper in 2010-2011
- Publication selected for inclusion in in *The Most Influential Papers of 10 Years DATE*, Edited by Lauwereins, Rudy; Madsen, Jan, 2008.

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- Nominated as one of MIT's top 100 researchers in 2002
- NSF Design and Manufacturing Grantee and SRC Research Assistantship 1993
- Lowell's Award for the Best Student in Science at the Northern Arizona University 1992
- NASA Undergraduate Research Fellowship 1991

FUNDING (as PI, Co-PI, senior contributor, student support)

- NSF CC-NPEO, \$2.5M, 2018-2021
- NSF NRI \$2.5M, 2018-2020
- DARPA/SRC JUMP CRISP \$40M, 2018-2023
- KACST IoT, \$2.9M, 2017-2019
- GRC IoT Reliability, \$240k, 2018-2021
- IBM-UCSD AIHL, \$16.3M, 2017-2022
- NSF CPS CHASE-CI, \$1M, 2017-2020
- Samsung IoT, \$300k, 2018
- Huawei, \$100k, 2018
- Intel, \$300k, 2016-2018.
- ARPA-E NODES \$2.5M, 2016-2018.
- NSF CSR \$450k
- NSF MetaSense \$1.126M
- Qualcomm FMA, Energy management of residences in the grid, \$75k, 2014-2015.
- CEC EISG, Energy management in data centers, \$95k, 2013-2014.
- NSF CSR, Energy efficient data centers, \$300k, 2013-2016.
- FCRP center "TerraSwarm," \$27.5M, 2013-2017
- NSF SCH: EXP SenseHealth, \$618k, 2013-2016
- NSF MRI visualization \$2M, 2013-2016
- Oracle gift, \$62k, 2012
- Google gift, \$57k, 2012 CSE
- NSF MRI optical networking \$1.06M, 2012-2014
- NSF OCI:Sensor-Rocks, \$274k, 2012-2014.
- NSF CCF, \$450k, 2012-2015.
- Futurewei gift, \$117k, 2012.
- Panasonic gift, \$100k, 2012.
- Qualcomm FMA, \$75k, 2012-2014.
- SRC, \$150k, 2011-2014.
- Qualcomm membership, \$150k, 2011.
- Oracle gift, \$100k, 2011. CNS
- Google gift, \$75k, 2011. CNS
- Google, \$125k, 2010. CSE
- Qualcomm gift, \$35k, 2010.
- Microsoft gift, \$300k, 2010
- NSF-ERC CIAN, \$14M total, 2010-2019
- NSF-Expedition on Variability, \$4.02M, 2010-2015
- NSF OCI INRC: TransLight/StarLight, \$2.05M, 2010-2014
- Qualcomm gift, \$75k, 2010-2011
- CNS, \$75k, 2010.
- NSF-CPS, \$1.5M, 2009-2013
- Sun Microsystems Gift, \$120k, 2009
- Google, \$50k, 2009.
- Qualcomm Gift, \$15k, 2009
- NIH PALMS, \$3.2M, 2007-2011

- MARCO-MuSyC center, \$3M, 2009-2012
- NSF CCF ARRA, \$476k, 2009-2013
- NSF GreenLight, \$20M, 2008-2012
- NSF FlashGordon, \$22M, 2011-2015
- Cisco Gift, \$80k, 2008-2009
- MARCO-GSRC Grant, \$154k, 2008-2009
- CNS Grant for thermal management, \$142k, 2008-2010
- CNS Grant for healthcare, \$116k, 2008-2010
- Xilinx gift of 20 XUP DVKs
- UC Micro Grant, \$30k, 2008-2010
- Sun Microsystems Gift, \$100k, 2008-2009
- NSF-CCF \$600k, sensing, 2007-2011
- Sun Microsystems Gift, \$60k, 2007
- CNS Grant, \$130k, 2006-2008
- NSF – HPWREN, \$3M, 2005-2009.
- LANL Structural Health Monitoring, \$7M, 2005-2009.
- UC Micro, \$30k, 2006.
- Sun Microsystems Gift, \$50k, 2005.
- CNS Grant, \$60k, 2005.
- Intel Grant, \$200k, 2005.
- UC Graduate and Travel Grant \$11k, 2005
- HP Labs - \$100k, 2003-2004

INVITED TALKS

1. Sony, CA, “Accelerating machine learning & HD computing using PIM,” 2019.
2. ARM, CA, “Power, performance, thermal & reliability modeling and management in IoT systems,” 2019.
3. Intel, OR, “Power, performance, thermal & reliability modeling and management in IoT systems,” 2019.
4. EPFL, Switzerland, “Context-aware learning and acceleration,” 2019.
5. Yahoo, CA, ““Context-aware learning and acceleration,” 2019.
6. Workshop on Brain-Inspired Architectures, NV, “Hyperdimensional Computing & Applications,” 2019.
7. Non-volatile Memory Workshop, “Hyperdimensional Computing and Its Applications,” 2019.
8. Altera, CA, “Accelerating Bioinformatics Workloads,” 2019.
9. IBM Research, CA, “Accelerating machine learning & HD computing using PIM,” 2019.
10. Huawei, CA, “Thermal management in mobiles,” 2018.
11. Samsung, CA, “Context-aware management in Smart Homes,” 2018.
12. IBM Research in Austin, TX, “Context-awareness for healthy aging,” 2018.
13. Xconomy, CA, “Big data meets big biology: Accelerating learning for healthy living,” 2018.
14. Huawei, China, “Proactive power and thermal management strategies,” 2018.
15. Samsung, CA, “Smart Homes: context-aware management,” 2018.
16. Intel Research, OR, “Reliability Management for IoT Systems,” 2018.
17. DARPA Electronic Resurgence Initiative, CA, “JUMP CRISP Center Overview,” 2018.
18. Micron, CA, “Accelerating machine learning workloads using PIM,” 2018.
19. JUMP C-BRIC Center, USA, “Accelerating machine learning & HD computing using PIM,” 2018.
20. JUMP ADA Center, USA, “Accelerating machine learning & HD computing using PIM,” 2018.
21. TSMC, Taiwan, “Accelerating machine learning & HD computing using PIM,” 2018.
22. GM, USA, “Context-aware management for IoT systems,” 2018.
23. China government delegation, CA, “Context-aware learning and acceleration,” 2018.
24. NSF CSR Workshop, WA, “Accelerating learning using PIM,” 2018.
25. HLTV Keynote, “Reliability and Maintainability of IoT systems,” 2017.

26. IBM, Austin, TX, "Context-aware IoT Systems," 2017.
27. Sony, Japan, "Context-aware IoT Systems" & "UCSD-IBM AI for Healthy Living Center", 2017.
28. D-Link, Japan, "UCSD-IBM AI for Healthy Living Center", 2017.
29. A-Star, Singapore, "UCSD-IBM AI for Healthy Living Center", 2017.
30. NRF, Singapore, "UCSD-IBM AI for Healthy Living Center", 2017.
31. NUS, Singapore, "UCSD-IBM AI for Healthy Living Center", 2017.
32. IBM, Kawasaki, Japan, "Context-aware IoT Systems, their Acceleration & Management," 2017.
33. Sony, Tokyo, Japan, "Context-aware IoT Systems, their Acceleration & Management," 2017.
34. IEEE/ACM Workshop on Variability Modeling and Characterization, Irvine, CA, "Increasing computational efficiency with novel computing paradigm," <http://www.cerc.utexas.edu/utda/vmc/>, 2017.
35. University of Melbourne, Australia, "Context-aware management for Smart Cities," 2016.
36. San Diego Port Authority, CA, "Context-aware management for Smart Cities," 2016.
37. CalTrans, CA, "Context-aware management for Smart Cities," 2016.
38. Cymer, CA, "System Energy Efficiency," 2016.
39. Hitachi, CA, "System Energy Efficiency," 2016.
40. Hewlett-Packard, CA, "System Energy Efficiency for IoT Applications," 2016.
41. IBM, CA, "Context-awareness for healthcare applications," 2016.
42. SDGE, CA, "Sensors to Grid," 2016.
43. Leidos, CA, "Improving Energy Efficiency in Smart Cities by Leveraging Context Awareness," 2016.
44. LG, CA, "System Energy Efficiency," 2016.
45. MediaTek, CA, "Context and the IoT," 2016.
46. Qualcomm, CA, "Approximate computing for IoT," 2016.
47. Raytheon, CA, "Improving system energy efficiency by leveraging context awareness," 2016.
48. UC Berkeley, "Hierarchical and context-aware management for the Smart Cities," 2015.
49. Arizona State University, AZ, "Context-aware energy and thermal management in systems," 2015.
50. University of Arizona, AZ, "Context-aware energy and thermal management in mobile systems," 2015.
51. SNU-UCSD-SDG&E MicroGrid (MG) Workshop, CA, "Leveraging Context for the Smart Cities," 2016.
52. Texas Instruments, TX, "Context-aware energy and thermal management," 2015.
53. Carnegie Mellon University, PA, "Distributed Control of Buildings Connected to a Smart Grid," 2015.
54. Fujitsu, CA, "Energy efficient datacenters and networks," 2015.
55. Intel, OR, "Distributed optimization for Smart Grid applications," 2015.
56. Intel, OR, "Approximate computing for Internet of Things applications," 2015.
57. University of Split, Croatia, "From sensors to smart cities," 2015.
58. Google, CA, "Context-aware energy management for residential applications," 2015.
59. Intel, OR, "Context and the IoT," 2015.
60. Intel, AZ, "Leveraging context-awareness for improving system energy efficiency," 2015.
61. Raytheon, Washington DC, "Ontology-Driven Context-Aware IoT Applications," 2015.
62. Intel, CA, "System Energy Efficiency," 2015.
63. Samsung, CA, "System energy efficiency," 2014.
64. IBM, NY, "Improving system energy efficiency by leveraging context awareness," 2014.
65. EPFL, Switzerland, "Context for distributed system energy efficiency," 2014.
66. Politecnico di Torino, Italy, "Context-aware energy and thermal management in mobile systems," 2014.
67. Politecnico di Milano, Italy, "Context-aware energy and thermal management in mobile systems," 2014.
68. EPFL, Switzerland, "Future Smart Environments," 2014.
69. University of Zagreb, Croatia, "Context-aware energy and thermal management in systems," 2014.
70. University of Split, Croatia, "Context-aware energy management for the Smart Grid applications," 2014.
71. Huawei, CA, "Datacenter energy efficiency," 2014.
72. Samsung, CA, "Context-aware energy and thermal management in mobile systems," 2014.
73. University of Maryland, "Context-aware energy and thermal management in mobile systems," 2014.

74. Raytheon, Washington DC, "Distributed energy management for the grid applications," 2013.
75. Intel, OR, "Distributed sensing and control for the smart grid applications," 2013.
76. Qualcomm, CA, "Modeling context in residences," 2013.
77. Qualcomm, CA, "Reliability management," 2013.
78. Intel, OR, "Energy and thermal management in mobile systems," 2013.
79. Panasonic, CA, "Using distributed batteries for energy management in residences," 2013.
80. Texas Instruments, TX, "SmartGrid and distributed batteries," 2013.
81. Google, CA, "Using batteries for peak power shaving," 2013.
82. University of Zagreb, Croatia, "Environmental sensor networks," 2013.
83. University of Split, Croatia, "Sensor networks in large scale systems," 2013.
84. Cisco, CA, "SmartGrid and sensing," 2013.
85. Intel, CA, "Mobile system energy and thermal management," 2013.
86. Qualcomm, CA, "Thermal and power management in mobile phones," 2013.
87. Raytheon, CA, "Energy management in systems," 2012.
88. Google, CA, "Peak power shaving in datacenters," 2012.
89. Fujitsu, CA, "Energy and thermal management," 2012.
90. SRCE, Croatia, "Energy management in datacenters," 2012.
91. Broadcom, CA, "Thermal management," 2012.
92. University of Maryland, MD, "Energy and thermal management," 2012.
93. Gatech, GA, "Energy and thermal management," 2012.
94. Panasonic, CA, "Energy management with batteries," 2012.
95. Flowmetrics, CA, "Cooling management in systems," 2012.
96. Qualcomm, CA, "Thermal and energy management in SoCs," 2012.
97. Oracle, CA, "Influence of fan vibrations on energy efficiency," 2012.
98. University of Arizona, AZ, "Energy management in large scale systems," 2012.
99. Arizona State University, AZ, "Energy and thermal management," 2012.
100. University of Chicago, IL, "Energy management in datacenters," 2012.
101. UIUC, IL, "Energy and thermal management," 2012.
102. Intel, CA, "Overview of energy and thermal management strategies," 2012.
103. Futurewei, TX, "Technology exchange about power-gating research," 2012.
104. Qualcomm, CA, "Power-gating and thermal management," 2012.
105. University of Zagreb, Croatia, "Energy and thermal management at the system level," 2012.
106. University of Split, Croatia, "Optimizing for energy in sensor networks," 2012.
107. Samsung, CA, "Energy and thermal management in mobile systems," 2012.
108. Texas Instruments, TX, "Sensor networks and energy management," 2012.
109. San Diego Gas and Electric, CA, "Energy management in large scale systems using batteries," 2012.
110. Synopsys, CA, "Thermal estimation in SoCs," 2012.
111. Oracle, CA, "Thermal management in servers," 2011.
112. Intel, CA, "Energy management in mobile systems," 2011.
113. IBM Labs, CA, "Optimizing system design for energy efficiency," 2011.
114. Texas Instruments, TX, "Thermal management in heterogeneous SoCs," 2011.
115. GLIF, Brasil, "Energy management in datacenters," 2011.
116. CICC panel on datacenters, CA, "Energy management in datacenters," 2011.
117. AMD, CA, "Energy and thermal management in systems," 2011.
118. Oracle, CA, "Thermal and cooling management in systems," 2011.
119. TU Dortmund, Germany, "Energy and thermal management in systems," 2011.
120. Cisco, CA, "Ultra-fast power gating," 2011.
121. Supercomputing, WA, "Using Green Energy Prediction for Energy Management in Large Scale Distributed Data Center Networks," 2011.

122. Qualcomm, CA, "Ultra-fast power gating," 2011.
123. BAE systems, CA, "System energy management," 2011.
124. Intel, OR, "Efficiency losses in mobile systems," 2011.
125. Ericsson, CA, "Thermal management at system level," 2011.
126. Qualcomm, CA, "Thermal management in heterogeneous 3D MPSOCs," 2011
127. LBNL, CA, "Energy efficient computing and networking in datacenters," 2011
128. EPFL, Switzerland, "Managing environmental variability in 2 & 3D designs," 2011.
129. Cisco, CA, "Energy efficient computing in datacenters," 2011
130. Microsoft Cloud Futures, WA, "Energy efficient computing in datacenters," 2011
131. Huawei, CA, "Energy efficient computing in datacenters," 2011
132. Ericsson, CA, "Energy efficient computing in datacenters," 2011
133. Intel, OR "Energy efficient computing in large scale systems," 2011
134. Qualcomm, "Energy and thermal management in 2 and 3D ICs", 2010.
135. Texas Instruments, "Energy and thermal management in heterogeneous multicore processors," 2010.
136. WirelessHealth 2010, "Population-aware wireless healthcare networks," 2010.
137. Microsoft Cloud Computing Futures, "Achieving Energy Efficient Computing for Future Large Scale Applications," 2010.
138. ASU, AZ, "Energy and Thermal Management," 2010
139. SRCE, Croatia, "Energy efficient computing in datacenters," 2010.
140. UC Berkeley, CA, "Energy efficient computing," 2010.
141. Raytheon, CA, "Energy efficient computing in large scale systems," 2010
142. Microsoft, WA, "Energy efficient computing in the face of heterogeneous workloads" 2010
143. UW, WA, "CitiSense: Heterogeneous wireless sensing for healthcare applications," 2010
144. UCSB keynote, CA, "Energy efficient computing," 2010
145. Yahoo, CA, "Energy efficient computing," 2010
146. Oracle CA, "Energy efficient computing within virtualization systems," 2010
147. GE, CA, "Energy efficient computing in datacenters," 2010
148. EDF, CA, "Energy efficient computing in datacenters," 2010
149. PG&E, CA, "Energy efficient computing in datacenters," 2010
150. NSF, DC, "Population-Area Wireless Healthcare Networks," NSF Workshop on Future Directions in Sensing Systems, 2009.
151. UIUC, IL, "Energy efficient computing," 2009.
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211. UC Berkeley – Berkeley, CA, "Energy efficient system design and utilization," 2002.
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217. IBM TJ Watson - Yorktown Heights, NY, "Energy efficient system design and utilization," 2001.
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