

# 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:
  - resource management and design of heterogeneous wireless sensor-control-actuator networks
    - heading the SmartCities theme in \$28M TerraSwarm center, that consists of 22 faculty from 10 top academic institutions in the USA
    - leading context-aware distributed optimization thrust as a part of ARPA-E NODES grant
    - NSF CitiSense project coverage in NY Times and the Wall Street Journal, December 2012
    - funded by DARPA via FCRP TerraSwarm, NSF, NIH, DOE & LANL, CNS, Intel, IBM, TI, UTC, Raytheon, Oracle, Qualcomm, Panasonic.
    - In collaboration with: TerraSwarm faculty, SDG&E, Panasonic, UCSD School of Medicine, SDSC, LANL, Oracle, Qualcomm, University of Bologna, EPFL, ETH, Stanford.
  - energy management in systems, from CPUs to networks and datacenters:
    - head of the Large Scale Systems thrust within MuSyC center, & energy efficiency work in NSF ERC CIAN
    - 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.
- published over 150 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
- leading projects as a PI, co-PI or senior personnel totaling more than \$130M
- teaching embedded systems and computer engineering classes

98 – 04 **HEWLETT-PACKARD LABS**

97 – 04 **STANFORD UNIVERSITY**

- led a team of researchers with the goal of developing new technologies targeted at wireless media market, interfaced with HP divisions, filed five patents
- obtained project funding, started a number of university collaborations
- moderated conference sessions and served on technical paper committees

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**

- developed a framework for design automation of high-speed VLSI interconnect geometries; the simulator has been used by member companies of Semiconductor Research Corporation

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 medical applications; the environment became a part of MRI tool
- 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. P. Mercati, F. Paterna, A. Bartolini, L. Benini, T. Simunic Rosing, "WARM: Workload-Aware Reliability Management in Linux/Android," to appear in IEEE TCAD 2016.
2. M. Imani, Shruti Patil, T. Rosing, "Approximate Computing using Multiple-Access Single-Charge Associative Memory" IEEE Transaction on Emerging Topics in Computing (TETC), 2016.
3. Mohsen Imani, Shruti Patil, Tajana S. Rosing, "Ultra-low power FinFET based SRAM cell employing sharing current concept", Microelectronic Reliability Elsevier Journal, 2015
4. 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.
5. E.A. Lee, J Rabaey, D. Blaauw, P. Dutta, K. Fu, C. Guestrin, B. Hartmann, R. Jafari, D. Jones, J. Kubiawicz, V. Kumar, R. Mangharam, R. Murray, G. Pappas, K. Pister, A. Rowe, A. Sangiovanni-Vincentelli, S.A. Seshia, T. Simunic Rosing, B. Taskar, J. Wawrzyniek, D. Wessel, "The Swarm at the Edge of the Cloud", IEEE Design & Test, 2014.
6. R. Ayoub, R. Nath, T. Simunic Rosing, "CoMETC: Coordinated Management of Energy, Thermal, & Cooling in Servers" TODAES'13.
7. A. Kahng, S. Kang, T. Simunic Rosing, R. Strong, "Many-Core Token-Based Adaptive Power Gating," IEEE TCAD'13.
8. 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.
9. S. Sharifi, T. Simunic Rosing, "PROMETHEUS: A Proactive Method for Thermal Management of Heterogeneous MPSoCs," IEEE TCAD'13.
10. 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.
11. 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.
12. 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.
13. R. Ayoub, K. Indukuri, T. Simunic Rosing, "Temperature Aware Dynamic Workload Scheduling in Multisocket CPU Servers," IEEE TCAD, 2011.
14. S. Sharifi, T. Simunic Rosing, "Accurate direct and indirect on-chip temperature sensing for efficient dynamic thermal management," IEEE TCAD, 2011.
15. E. Regini, D. Lim, T. Simunic Rosing, "Energy management in heterogeneous wireless sensor networks," JOLPE, 2011.
16. 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**
17. 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.
18. S. Sharifi, T. Simunic Rosing, "Accurate direct and indirect on-chip temperature sensing for efficient dynamic thermal management," IEEE TCAD, 2010.
19. A. Coskun, T. Simunic Rosing, "Utilizing Predictors for Efficient Thermal Management in Multiprocessor SoCs," IEEE TCAD, 2009.
20. G. Dhiman, T. Simunic Rosing, "Using online learning for system level power management," IEEE TCAD, 2009.
21. A. Coskun, T. Simunic Rosing, K. Whisnant, K. Gross, "Static and dynamic temperature-aware scheduling for multiprocessor SoCs," IEEE TVLSI, 2008.
22. T. Simunic Rosing, K. Mihic, G. De Micheli, "Power and reliability management of SOCs," IEEE Transactions on VLSI, 2007.
23. G. Park, T. Simunic Rosing, M. Todd, C. Farrar, W. Hodgkiss, "Energy Harvesting for Structural Health Monitoring in Sensor Networks," ASCE Journal, 2007.

24. 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.
25. T. Simunic, S. Boyd, P. Glynn: "Managing Power Consumption in Networks on Chips," IEEE Transactions on VLSI, pp. 96- 107, Jan 2004.
26. 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.
27. 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.
28. 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.
29. T. Simunic, L. Benini, P. Glynn, G. De Micheli: "Event-Driven Power Management", IEEE Transactions on CAD, pp.840-857, July 2001.
30. T. Simunic, M. Smith: "Dynamic Power Management at HP", Invited Paper in Special Issue of Design and Test Journal, 2001.
31. T. Simunic, L. Benini, G. De Micheli: "Energy-Efficient Design of Battery-Powered Embedded Systems", Special Issue of IEEE Transactions on VLSI, 2001.
32. 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, Yeseong Kim, Tajana S. Rosing, "MPIM: Multi-Purpose In-Memory Processing using Configurable Resistive Memory", ASP-DAC, 2017.
2. Mohsen Imani, Daniel Peroni, Abbas Rahimi, Tajana S. Rosing, "Resistive CAM Acceleration for Tunable Approximate Computing", ICCD, 2016. (selected as top ranked paper for publishing in IEEE TETC)
3. Pietro Mercati, Francesco Paterna, Andrea Bartolini, Mohsen Imani, Luca Benini, Tajana S. Rosing, "VarDroid: Online Variability Emulation in Android/Linux Platforms", GLSVLSI, 2016
4. J. Venkatesh, C. Chan, A. S. Akyurek, B. Aksanli, T. S. Rosing, "A Modular Approach to Context-Aware IoT Applications," IOTDI'16.
5. A. S. Akyurek, T. S. Rosing, "Optimal In-Network Packet Aggregation Policy for Maximum Information Freshness," EUCNC'16.
6. M. Imani, Y. Kim, A. Rahimi, T. Rosing, "ACAM: Approximate Computing Based on Adaptive Associative Memory with Online Learning" ISLPED'16.
7. M. Imani, A. Rahimi, Y. Kim, T. Rosing, "A Low-Power Hybrid Magnetic Cache Architecture Exploiting Narrow-Width Values" NVMSA'16.
8. M. Imani, A. Rahimi, T. Rosing, "Resistive Configurable Associative Memory for Approximate Computing" DATE'16.
9. M. Imani, S. Patil, T. Rosing, "MASC: Ultra-Low Energy Multiple-Access Single-Charge TCAM for Approximate Computing" DATE'16.
10. M. Imani, T. Rosing, "Processing Acceleration with Resistive Memory-based Computation" MEMSYS'16.
11. M. Imani, P. Mercati, T. Rosing, "ReMAM: Low Energy Resistive Multi-Stage Associative Memory for Energy Efficient Computing" ISQED'16.
12. M. Imani, S. Patil, T. Rosing, "Low Power Data-Aware STT-RAM based Hybrid Cache Architecture," ISQED'16.
13. M. Imani, Y. Kim, A. Rahimi, T. Rosing, "Associative Memory with Online Learning for Approximate Computing" DAC'16 (WIP).
14. M. Imani, S. Patil, T. Rosing, "DCC: Double Capacity Cache for Narrow-Width Data Values" GLSVLSI'16.
15. Jinseok Yang, S. Tilak, T. S. Rosing, "Interactive Context-aware Power Management Technique for Optimizing Sensor Network Lifetime," SENSORNETS'16, nominated for the **best paper award**.
16. B. Aksanli, A. S. Akyurek, T. S. Rosing, "User Behavior Modeling for Estimating Residential Energy Consumption," invited paper at SGSC'15.
17. J. Venkatesh, S. Chen, P. Tinnakornsrisuphap, T. S. Rosing, "Lifetime-dependent Battery Usage Optimization for Grid-Connected Residential Systems", MSCPES, 2015.

18. Mercati P, Hanumaiah V., Kulkarni J., Bloch S. and Rosing T. "BLAST: Battery Lifetime-constrained Adaptation with Selected Target" MOBIQUITOUS 2015.
19. A. S. Akyurek and B. Aksanli and T. S. Rosing, S2Sim: Smart Grid Swarm Simulator, IGSC 2015.
20. Baris Aksanli, Alper Sinan Akyurek, Tajana Simunic Rosing, "Minimizing the Effects of Data Centers on Microgrid Instability", IGSC'15
21. Yeseong Kim, Mohsen Imani, Shruti Patil, Tajana S. Rosing, "CAUSE: Critical Application Usage-Aware Memory System using Non-volatile Memory for Mobile Devices", ICCAD 2015.
22. Y. Kim, F. Paterna, T. S. Rosing, "Smartphone Analysis and Optimization based on User Activity Recognition," ICCAD'15.
23. Shruti Patil, Yeseong Kim, Kunal Korgaonkar, Ibrahim Awwal, Tajana S. Rosing, "Characterization of User's Behavior Variations for Design of Replayable Mobile Workloads", MOBICASE 2015.
24. F. Paterna, T. S. Rosing, "Modeling and Mitigation of Extra-SoC Thermal Coupling Effects and Heat Transfer Variations in Mobile Devices," ICCAD'15.
25. M. Imani, S. Patil, T. S. Rosing, "Hierarchical Design of Robust and Low Data Dependent 32KB FinFET Based SRAM Array", Nanoarch'15.
26. M. Imani, S. Patil, M. Jafari, T. S. Rosing, "Ultra-Low Read leakage SRAM Cell Utilizing Independently-Controlled-Gate FinFET", DAC 2015 (WIP).
27. M. Imani, S. Patil, T. S. Rosing, "Using STT-RAM Based Buffers in Digital Circuits", NVMW 2015.
28. H. Rodrigues, R. Strong, T. S. Rosing. "Accurate Emulation of Fast Optical Circuit Switches", ICC'15.
29. H. Rodrigues, R. Strong, A. Akyurek, T. S. Rosing. "Dynamic Optical Switching for Latency Sensitive Applications", ACM/IEEE Symposium on Architectures for Networking and Communications Systems, 2015
30. Y. Chen, S. Patil, T. S. Rosing, "GazeTube: Gaze-Based Adaptive Video Playback for Bandwidth and Power Optimizations," Globecom 2015.
31. Jinseok Yang, S. Tilak, T. S. Rosing, "Transmission manager in heterogeneous applications running WSNs," IEEE Globecom 2015
32. Jagannathan Venkatesh, Christine Chan, Alper Sinan Akyurek, Tajana Simunic Rosing, "A Context-Driven IoT Middleware Architecture", TechCon, 2015.
33. Christine Chan, Alper Sinan Akyurek, Kalyan Vaidyanathan, Kenny Gross, Tajana Rosing, "Optimization of Energy, Cooling and IO Performance for Data-intensive Applications on Enterprise Servers", TECHCON, 2015.
34. Pietro Mercati, Francesco Paterna, Andrea Bartolini, Luca Benini, Tajana Simunic Rosing, "Variability Emulation on Real Linux/Android Devices", TECHCON 2015.
35. Jinseok Yang, S. Tilak, T. S. Rosing, "Leveraging application context for efficient sensing," IEEE ISSNIP 2014
36. Baris Aksanli and Tajana Rosing. Providing Regulation Services and Managing Data Center Peak Power Budgets. Design, Automation and Test in Europe (DATE), 2014.
37. H. Rodrigues, I. Monga, A. Sadasivarao, S. Syed, C. Guok, E. Pouyol, C. Liou, and T. S. Rosing. "Traffic Optimization in Multi-Layered WANs using SDN." IEEE High-Performance Interconnects, 2014. **Best student paper award.**
38. A. Sadasivarao, H. Rodrigues, S. Syed, C. Liou, S. Balakrishnan, A. Lake, E. Poyoul, C. Guok, I. Monga, T. Rosing. , "Enabling Multi-Layer Provisioning and Optimization for Core Transport Networks with Unified Packet-Optical Control Plan", 11th USENIX Symposium on Networked Systems Design and Implementation, NSDI'14.
39. H. Rodrigues, A. Akyurek, T. Rosing, "OCSEMU: SDN Enabled Fast Hybrid Optical Circuit Switch Emulator Platform to Study Application Performance in the Emerging Optical Data Center", OIDA Software Defined Photonic and Data Center Networks Workshop, 2014.
40. H. Rodrigues, R. Strong, T. Rosing, "Scheduling Optical Tunnels to Distributed Applications", USENIX Annual Technical Conference, ATC'14.
41. B. O. Akyurek and A. S. Akyurek and J. Kleissl and T. S. Rosing, TESLA: Taylor Expanded Solar Analog Forecasting, IEEE SmartGridComm 2014
42. Mercati P, Paterna F., Bartolini A, Benini L and Rosing T "Variability Management in Mobile Multicore Processors under Lifetime Constraints", ICCD'14.
43. Mercati P, Bartolini A, Paterna F., Benini L and Rosing T "An On-line Reliability Emulation Framework" in Embedded and Ubiquitous Computing, IEEE Proceedings of the International Conference on (EUC14), 2014.
44. Paterna F., Zanotelli J. and Rosing T. "Ambient variation-tolerant and inter components aware thermal management for mobile system on chips" DATE'14.

45. Mercati P, Bartolini A, Paterna F., Benini L and Rosing T “A Linux-Governor Based Dynamic Reliability Manager for Android Mobile Devices” DATE’14.
46. P. Mercati, T. Simunic Rosing, V. Hanumaiah, J. Kulkarni, S. Bloch, “User-centric Joint Power and Thermal Management for Smartphones,” MOBICASE’14.
47. Baris Aksanli, Alper Sinan Akyurek, Madhur Behl, Meghan Clark, Alexandre Donze, Prabal Dutta, Patrick Lazik, Mehdi Maasoumy, Rahul Mangharam, Truong X. Nghiem, Vasu Raman, Anthony Rowe, Alberto Sangiovanni-Vincentelli, Sanjit A. Seshia, Tajana Simunic Rosing, and Jagannathan Venkatesh. Distributed Control of a Swarm of Buildings Connected to a Smart Grid. 1st ACM International Conference on Embedded Systems For Energy-Efficient Buildings (BuildSys), 2014.
48. Baris Aksanli, Tajana Rosing, "Energy Management and Cost Analysis in Residential Houses using Batteries", SRC TECHCON, 2014
49. F. Seracini, X. Zhang, T. S. Rosing, I. Krueger, “A Proactive Customer-Aware Resource Allocation Approach for Data Centers”, ISPA’14.
50. B. Milosevic, J. Yang, N. Verma, S. S. Tilak, Piero Zappi, Elisabetta Farella, L. Benini, T. Simunic Rosing, “Efficient Energy Management and Data Recovery in Sensor Networks using Latent Variables Based Tensor Factorization”, MSWiM, 2013.
51. A. S. Akyurek, B. Torre, T. S. Rosing, “ECO-DAC Energy Control Over Divide and Control,” IEEE SmartGridComm 2013.
52. B. Aksanli, T.S. Rosing, “Optimal Battery Configuration in a Residential Home with Time-of-Use Pricing,” IEEE SmartGridComm 2013.
53. C. Chan, B. Pan, K. Gross, K. Vaidyanathan, T. Rosing, "Correcting vibration-induced performance degradation in enterprise servers", SIGMETRICS Performance Evaluation Review, 2013. **Best Paper Award**
54. Baris Aksanli, Eddie Pettis, Tajana Rosing, "Architecting Efficient Peak Power Shaving Using Batteries in Data Centers", International Symposium on Modeling, Analysis and Simulation of Computer and Telecommunication Systems (MASCOTS), 2013.
55. G. Porter, R. Strong, N. Farrington, A. Forencich, P. Sun, T. Rosing, Y. Fainman, G. Papen, A. Vahdat, “Integrating Microsecond Circuit Switching into the Data Center,” SIGCOMM’13.
56. Rajib Nath, Raid Ayoub, Tajana S. Rosing, "Temperature Aware Thread Block Scheduling in GPGPUs", Design Automation Conference, 2013
57. P. Mercati, A. Bartolini, F. Paterna, T. Simunic Rosing, L. Benini, “Workload and User Experience-Aware Dynamic Reliability Management in Multicore Processors,” DAC 2013.
58. J. Yang, S. Tilak. D. Krishniswamy, T Simunic Rosing, “A novel protocol for adaptive broadcasting of sensor data in urban scenarios,” GLOBECOM, 2013.
59. Baris Aksanli, Eddie Pettis, Tajana Rosing, "Distributed Battery Control for Peak Power Shaving in Data Centers ", International Green Computing Conference (IGCC), 2013.
60. J. Venkatesh, B. Aksanli, Jean-Claude Junqua, Philippe Morin, T. Simunic Rosing, "HomeSim: Comprehensive, Smart, Residential Electrical Energy Simulation and Scheduling", IGCC’13.
61. Baris Aksanli, Jagannathan Venkatesh, Tajana Rosing, and Inder Monga, "A Comprehensive Approach to Reduce the Energy Cost of Network of Datacenters”, ISCC, 2013. **Best paper award**
62. Jagannathan Venkatesh, Baris Aksanli, and Tajana Rosing, "Residential Energy Simulation and Scheduling: A Case Study Approach", International Symposium on Computers and Communications (ISCC), 2013
63. Rajib Nath, Douglas Carmean and Tajana S. Rosing, "Power Modeling and Thermal Management Techniques for Many Core Processors", The IEEE symposium on Computers and Communications (ISCC), 2013.
64. L. Zhang, G. Dhiman, and T. S. Rosing. "vGreenNet: Managing Server and Networking Resources of Co-located Heterogeneous VMs". IEEE International Parallel and Distributed Processing Symposium (IPDPS), High Performance Grid and Cloud Computing, 2013.
65. Filippo Seracini; Xiang Zhang; Ingolf Krueger; Tajana Rosing; Massimiliano Menarini, “Green Web Services: Improving Energy Efficiency in Data Centers via Workload Predictions,” ICSEWS’13 GREENS.
66. Andrew B. Kahng, Siddhartha Nath, Tajana S. Rosing, “On Potential Design Impacts of Electromigration Awareness,” ASPDAC’13.
67. Nima Nikzad, Nakul Verma, Celal Ziftci, Elizabeth Bales, Nichole Quick, Piero Zappi, Kevin Patrick, Sanjoy Dasgupta, Ingolf Krueger, Tajana Simunic Rosing, William G. Griswold. "CitiSense: Improving Geospatial

- Environmental Assessment of Air Quality Using a Wireless Personal Exposure Monitoring System". *Wireless Health* 2012. **Best paper award.**
68. G. Dhiman, V. Kontorinis, R. Ayoub, L. Zhang, C. Sadler+, D. Tullsen, T. Simunic Rosing, "Themis: Energy Efficient Management of Workloads in Virtualized Data Centers," EuroPar-VHPC'12.
  69. Mohammad Moghimi, Jagannathan Venkatesh, Piero Zappi and Tajana Rosing, "Context-Aware Mobile Power Management Using Fuzzy Inference as a Service," MobiCASE'12.
  70. V. Kontorinis, E. Zhang, B. Aksanli, J. Samson, H. Homayoun, E. Pettis, D. Tullsen, T. Simunic Rosing, "Managing Distributed UPS Energy for Effective Power Capping in Data Centers," ISCA 2012.
  71. R. Strong, S. Kang, K. Jeong, A. Kahng, T. Simunic Rosing, "TAP: Token-aware Power Gating," ISLPED'12. (Note: authors listed in the order of contribution; the paper had alphabetical order)
  72. C. Chan, Y. Jin, YK Wu, K. Gross, K. Vaidyanathan, R. Ayoub, T. Simunic Rosing, "Fan-Speed-Aware Scheduling of Data Intensive Jobs," ISLPED'12.
  73. P. Zappi, E. Bales, JH Park, W. Griswold and T. Šimunić Rosing, "The CitiSense Air Quality Monitoring Mobile Sensor Node," IPSN-Mobile Sensing, 2012.
  74. R. Herrmann, P. Zappi, T. Simunic Rosing, "Context Aware Power Management of Mobile Systems for Sensing Applications," IPSN-Mobile Sensing, 2012.
  75. R. Ayoub, R. Nath, T. Simunic Rosing, "JETC: Joint Energy Thermal and Cooling Management for Memory and CPU Subsystems in Servers," HPCA 2012.
  76. Nima Nikzad, Jinseok Yang, Piero Zappi, Tajana Simunic Rosing, and Dilip Krishnaswamy, "Model-driven Adaptive Wireless Sensing for Environmental Healthcare Feedback Systems," IEEE ICC 2012.
  77. Baris Aksanli, Tajana S. Rosing, Inder Monga, "Benefits of Green Energy and Proportionality in High Speed Wide Area Networks Connecting Data Centers," DATE 2012.
  78. R. Strong, S. Kang, K. Jeong, A. Kahng, T. Simunic Rosing, "MAPG: Memory Access Power Gating," DATE'12. (Note: authors listed in the order of contribution; the paper had alphabetical order)
  79. S. Sharifi, R. Ayoub, T. Simunic Rosing, "TempoMP: Integrated Prediction and Management of Temperature in Heterogeneous MPSoCs," DATE'12.
  80. Baris Aksanli, Jagannathan Venkatesh, Liuyi Zhang, Tajana Rosing, "Utilizing Green Energy Prediction to Schedule Mixed Batch And Service Jobs in Data Centers," HotPower 2011.
  81. R. Ayoub, U. Ogras, E. Gorbato, Y. Jin, T. Kam, P. Diefenbough, T. Rosing, "OS-level Power Minimization Under Tight Performance Constraints in General Purpose Systems," ISLPED 2011.
  82. Denis Dondi, Piero Zappi, Tajana Šimunić Rosing, "A Scheduling Algorithm for Consistent Monitoring Results with Solar Powered High-Performance Wireless Embedded Systems," ISLPED 2011.
  83. Y. Wu, S. Sharifi, T. Simunic Rosing, "Distributed Thermal Management for Embedded Heterogeneous MPSoCs with Dedicated Hardware Accelerators", ICCD 2011.
  84. S. Sharifi, Yen-Kuan Wu, T. Simunic Rosing, "Temperature-aware Scheduling for Embedded Heterogeneous MPSoCs with Special Purpose IP Cores," ETMEC 2011.
  85. R. Ayoub, K. Indukuri, T. Simunic Rosing, "Energy Efficient Proactive Thermal Management in Memory Subsystem," ISLPED 2010.
  86. G. Dhiman, K. Mihic, T. Simunic Rosing, "A system for online power prediction in virtualized environments using Gaussian mixture models," DAC'10.
  87. Nichole Quick, Kevin Patrick, Nima Nikzad, Celal Ziftci, Piero Zappi, Priti Aghera, Nakul Verma, Barry Demchak, PJE Quintana, Ingolf Krueger, Tajana Rosing, Sanjoy Dasgupta, Hovav Shacham & William Griswold, "CitiSense – Adaptive Services for Community-Driven Behavioral and Environmental Monitoring to Induce Change," invited poster at mHealthSummit 2010.
  88. Claudiu Farcas, Filippo Seracini, Ingolf Krüger and Tajana Simunic Rosing, "Greening Datacenters through Software," invited poster at NASA Workshop on Global Collaboration in Environmental and Alternative Energy Strategies, 2010.
  89. O. Milenkovic, R. Baraniuk, and T. Simunic Rosing, "Compressed sensing meets bioinformatics: A novel DNA microarray design," in *Second Annual ITA Workshop*, San Diego, California, January 2007.
  90. R. Ayoub, K. Indukuri, T. Rosing, "Energy Efficient Proactive Thermal Management in Memory Subsystem," ISLPED 2010.

91. G. Dhiman, V. Kontorinis, D. Tullsen, T. Rosing, E. Saxe, J. Chew, "Dynamic Workload Characterization for Power Efficient Scheduling on CMP Systems," ISLPED 2010.
92. D. Dondi, A. Di Pompeo, C. Tenti, and T. S. Rosing, "SHiMmer: A Wireless Harvesting Embedded System for Active Ultrasonic Structural Health Monitoring," IEEE Sensors 2010.
93. P. Aghera, D. Krishnaswamy, T. Rosing, "DynAGreen: Hierarchical Dynamic Energy Efficient Task Assignment for Wireless Healthcare Systems," BodyNets, 2010.
94. E.B. Flynn, S. Kpotufe, D. Harvey, E. Figueiredo, S. Taylor, D. Dondi, T. Mollov, M.D. Todd, T.S. Rosing, G. Park, and C. Farrar, "SHMTools: a new embeddable software package for SHM applications," *Sensors and Smart Structures Technologies for Civil, Mechanical, and Aerospace Systems*, SPIE, 2010.
95. C. Olschanowsky, L. Carrington, M. Tikir, M. Laurenzano, T. Rosing, A. Snavely, "Fine-grained Energy Consumption Characterization and Modeling," DOD High Performance Computing Modernization Program User Group Conference, June 2010.
96. R. Ayub, S. Sharifi, T. Simunic Rosing, "GentleCool: cooling aware proactive workload scheduling in multi-machine systems," DATE'10.
97. P. Aghera, A. Coskun, D. Fang, D. Krishnaswamy, T. Simunic Rosing, "DynAHeal: Dynamic energy efficient task assignment for wireless healthcare systems," DATE'10.
98. A. Sitaraman, D. Dondi, T. Simunic Rosing, "DVFS Based Task Scheduling in a Harvesting WSN for Structural Health Monitoring," DATE'10.
99. A. Coskun, D. Atienza, T. Simunic Rosing, "Energy-efficient variable-flow liquid cooling in 3D stacked architectures," DATE'10.
100. R. Ayoub, T. Simunic Rosing, "Cool and Save: Cooling Aware Dynamic Workload Scheduling in Multi-socket CPU Systems," ASPDAC'10.
101. S. Sharifi, A. Coskun, T. Simunic Rosing, "Hybrid Dynamic Energy and Thermal Management in Heterogeneous Embedded Multiprocessors," ASPDAC'10.
102. E. Regini, T. Simunic Rosing, "An Energy Efficient Wireless Communication Mechanism for Sensor Node Cluster Heads," ISSNIP'09.
103. A. Coskun, J. Ayala, D. Atienza, T. Simunic Rosing, "Modeling and Dynamic Management of 3D Multicore Systems with Liquid Cooling," **Best paper award** at VLSI-SOC 2009.
104. A. Coskun, A. Kahng, T. Simunic Rosing, "Temperature- and Cost-Aware Design of 3D Multiprocessor Architectures", DSD'09.
105. A. Coskun, R. Strong, D. Tullsen, T. Simunic Rosing, "Evaluating the Impact of Job Scheduling and Power Management on Processor Lifetime for Chip Multiprocessors," SIGMETRICS'09.
106. R. Ayoub, T. Simunic Rosing, "Predict and Act: Dynamic Thermal Management for Multicore Processors," ISLPED'09.
107. G. Dhiman, R. Ayoub, G. Marchetti, T. Simunic Rosing, "vGreen: A System for Energy Efficient Computing in Virtualized Environments," **Nominated for the best paper award** at ISLPED'09.
108. G. Dhiman, R. Ayoub, T. Simunic Rosing, "PDRM: A hybrid PRAM DRAM main memory system", DAC'09.
109. P. Aghera, D. Fang, T. Simunic Rosing, K. Patrick "Energy management in wireless healthcare systems," IPSN'09.
110. J. Bradely Steck, T. Simunic Rosing, "Adapting Performance in Energy Harvesting Wireless Sensor Networks for Structural Health Monitoring Applications," **Invited paper** at IWSHM'09.
111. J. Bradely Steck, T. Simunic Rosing, "Adapting Task Utility in Externally Triggered Energy Harvesting Wireless Sensing Systems," INSS'09.
112. J. Recas, C. Bergonzini, T. Simunic Rosing, D. Atienza, "Prediction and Management in Energy Harvested Wireless Sensor Nodes," **Invited paper** at Wireless VITAE'09.
113. J. Recas, C. Bergonzini, B. Lee, T. Simunic Rosing, "Solar energy harvesting prediction algorithm," Energy Harvesting Workshop'09.
114. A. K. Coskun, T. Simunic Rosing, J. Ayala, D. Atienza, Y. Leblebici. "Dynamic Thermal Management in 3D Multicore Architectures," DATE 2009.
115. A. Coskun, T. Simunic Rosing, K. Gross, "Proactive temperature balancing for low cost thermal management in MPSOCs," ICCAD'08.
116. G. Dhiman, K. Pusukuri, T. Simunic Rosing, "Analysis of Dynamic Voltage Scaling for System Level Energy Management," USENIX-HotPower'08.

117. E. Regini, D. Lim, T. Simunic Rosing, "Distributed scheduling for heterogeneous wireless sensor networks," IASTEAD'08.
118. A. Coskun, T. Simunic Rosing, K. Gross, "Proactive temperature management in MPSOCs," ISLPED'08.
119. A. Coskun, T. Simunic Rosing, K. Gross, "Temperature management in MPSOCs using online learning," DAC'08.
120. A. Coskun, T. Simunic Rosing, "Temperature-aware MPSOC scheduling for reducing hot spots and gradients," ASPDAC'08.
121. S. Sharifi, T. Simunic Rosing, "An analytical model for the upper bound on temperature differences on a chip," GLVLSI'08.
122. S. Sharifi, T. Simunic Rosing, "Accurate temperature sensing for efficient thermal management," ISQED'08.
123. G. Dhiman, T. Simunic Rosing, "Dynamic Voltage Scaling using Machine Learning," ISLPED'07.
124. Todd, M., Mascarenas, D., Flynn, E., Rosing, T., Lee, B., Musiani, D., Dasgupta, S., Kpotufe, S., Hsu, D., Gupta, R., Park, G., Overly, T., Nothnagel, M., Farrar, C., "A different approach to sensor networking for SHM: Remote powering and interrogation with unmanned aerial vehicles", *Keynote* at *Workshop on Structural Health Monitoring*, 2007.
125. D. Musiani, K. Lin, T. Simunic Rosing, "An Active Sensing Platform for Structural Health Monitoring Application," IPSN-SPOTS'07.
126. A. Coskun, T. Simunic Rosing, "Temperature-aware task scheduling," DATE'07.
127. D. Lim, J. Shim, T. Simunic Rosing, T. Javidi, "Scheduling data delivery in heterogeneous wireless sensor networks," ISM'06.
128. G. Dhiman, T. Simunic Rosing, "Dynamic Power Management Using Machine Learning," *Nominated for the best paper award* at ICCAD'06
129. A. Coskun, T. Simunic Rosing, "A Simulation Methodology for Reliability Analysis in Multi-Core SoCs," GVLSI'06
130. T. Simunic, K. Mihic, G. De Micheli: "Optimization of Reliability and Power Consumption in Systems on a Chip," PATMOS'05.
131. T. Simunic, W. Quadeer, G. De Micheli: "Managing heterogeneous wireless environments via Hotspot servers," MMCN'05.
132. T. Simunic, K. Mihic, G. De Micheli: "Reliability and Power Management of Integrated Systems," *Invited paper* at DSD'04
133. G. Manjunath, V. Krishnan, T. Simunic, J. Tourrilhes, A. McReynolds, D. Das, V. Srinivasmurthy, A. Srinivasan: "Smart Edge Server – going beyond a wireless access point," WMASH'04.
134. O. Celebican, T. S. Rosing, V. J. Mooney: "Energy estimation of peripheral devices in embedded systems," GLVLSI'04.
135. W. Quadeer, T. Simunic, J. Ankcorn, V. Krishnan, G. De Micheli, "Heterogeneous wireless network management", PACS'03.
136. A. Acquaviva, T. Simunic, V. Deolalikar, S. Roy: "Remote Power Control of Wireless Network Interfaces", PATMOS'03.
137. B. Delaney, N. Jayant, T. Simunic: "A WLAN Scheduling Algorithm to Reduce the Energy Consumption of a Distributed Speech Recognition Front-End", ESTIMedia'03.
138. A. Peymandoust, T. Simunic, G. De Micheli: "Complex Software Library Element Mapping with Symbolic Algebra", DAC'02.
139. T. Simunic, S. Boyd: "Managing Power Consumption in Networks on Chips", DATE'02.
140. A. Peymandoust, T. Simunic, G. De Micheli: "Low Power Embedded Software Optimization using Symbolic Algebra", pp. 1052-1057, DATE'02.
141. B. Delaney, N. Jayant, M. Hans, T. Simunic, A. Acquaviva: "Low-Power Fixed-Point Front-End Feature Extraction for Distributed Speech Recognition", ICASSP'02.
142. T. Simunic, L. Benini, A. Acquaviva, P. Glynn, G. De Micheli: "Dynamic Voltage Scaling for Portable Systems", DAC'01.
143. T. Simunic, L. Benini, P. Glynn, G. De Micheli: "Dynamic Power Management of Portable Systems", MOBICOM'00.
144. T. Simunic, L. Benini, G. De Micheli, M. Hans: "Source Code Optimization and Profiling of Energy Consumption in Embedded Systems", *Invited paper* at ISSS'00.



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145. T. Simunic, H. Vikalo, P. Glynn, G. De Micheli: “Energy Efficient Design of Portable Wireless Systems”, ISLPED’00.
146. T. Simunic, L. Benini, P. Glynn, G. De Micheli: “Dynamic Power Management of Laptop Hard Disk”, DATE’00.
147. 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.
148. T. Simunic, L. Benini, G. De Micheli: “Event-driven Power Management of Portable Systems”, ISSS’99.
149. T. Simunic, L. Benini, G. De Micheli: “Energy-efficient design of Battery-Powered Embedded Systems”, ISLPED’99.
150. T. Simunic, L. Benini, G. De Micheli: “Cycle-Accurate Simulation of Energy Consumption in Embedded Systems”, DAC’99.
151. Y. Lu, T. Simunic, G. De Micheli: “Software Controlled Power Management”, CODES’99.
152. J. Rozenblit, T. Simunic: “Techniques for Intelligent VLSI Interconnect Design,” DMC’94.
153. T. Simunic, J. Rozenblit: “Reduction of Signal Delay and Crosstalk in Electronic Packaging,” EPEP’93.
154. 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. D. Musiani, K. Lin, T. Simunic Rosing, D. Mascarenas, E. Flynn, C. Farrar, G. Park, “Wireless node for active sensing in SHM applications,” invention disclosure filed 2006.
2. T. Simunic, O. Celebican: “Estimation and optimization of system I/O device power consumption,” filed 2004.
3. T. Simunic, “Wireless resource management in heterogeneous networks,” filed 2004.
4. T. Simunic, A. Acquaviva, “Server-driven Power Management,” filed 2003.
5. T. Simunic, A. Acquaviva, L. Benini, “Application-driven method and apparatus for limiting power consumption in a processor-controlled hardware platform,” USA Patent No. 7,272,730, granted 2007.

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6. V. Deolalikar, T. Simunic: "Method and system for power control", USA Patent No. 7,190,980, granted 2007.
7. T. Simunic, N. Mehta, C. Crome : "Method for Test Vector Analysis"; USA Patent No. 5,923,567, granted 2005.
8. T. Simunic, N. Mehta, C. Crome : "Device for Test Vector Analysis"; USA Patent No. 6,197,605, granted 2005.

### **THESES** (supervised & published)

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

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### ACADEMIC COMMUNITY SERVICE

- 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
- 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 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

- Triton Drone Racing club faculty advisor 2016-pres
- UCSD Undergraduate Council Member 2016-pres.
- Involved in 8 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
- 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

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## 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 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

- Awarded John J. and Susan M. Fratamico Endowed Chair in CSE Department, 2014.
- 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.
- 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)

- 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.

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- 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, 2010-2014
- 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. Intel, OR, “Energy and thermal management in mobile systems,” 2013.
2. Panasonic, CA, “Using distributed batteries for energy management in residences,” 2013.
3. Texas Instruments, TX, “SmartGrid and distributed batteries,” 2013.
4. Google, CA, “Using batteries for peak power shaving,” 2013.
5. University of Zagreb, Croatia, “Environmental sensor networks,” 2013.
6. University of Split, Croatia, “Sensor networks in large scale systems,” 2013.
7. Cisco, CA, “SmartGrid and sensing,” 2013.
8. Intel, CA, “Mobile system energy and thermal management,” 2013.
9. Qualcomm, CA, “Thermal and power management in mobile phones,” 2013.

10. Raytheon, CA, "Energy management in systems," 2012.
11. Google, CA, "Peak power shaving in datacenters," 2012.
12. Fujitsu, CA, "Energy and thermal management," 2012.
13. SRCE, Croatia, "Energy management in datacenters," 2012.
14. Broadcom, CA, "Thermal management," 2012.
15. University of Maryland, MD, "Energy and thermal management," 2012.
16. Gatech, GA, "Energy and thermal management," 2012.
17. Panasonic, CA, "Energy management with batteries," 2012.
18. Flowmetrics, CA, "Cooling management in systems," 2012.
19. Qualcomm, CA, "Thermal and energy management in SoCs," 2012.
20. Oracle, CA, "Influence of fan vibrations on energy efficiency," 2012.
21. University of Arizona, AZ, "Energy management in large scale systems," 2012.
22. Arizona State University, AZ, "Energy and thermal management," 2012.
23. University of Chicago, IL, "Energy management in datacenters," 2012.
24. UIUC, IL, "Energy and thermal management," 2012.
25. Intel, CA, "Overview of energy and thermal management strategies," 2012.
26. Futurewei, TX, "Technology exchange about power-gating research," 2012.
27. Qualcomm, CA, "Power-gating and thermal management," 2012.
28. University of Zagreb, Croatia, "Energy and thermal management at the system level," 2012.
29. University of Split, Croatia, "Optimizing for energy in sensor networks," 2012.
30. Samsung, CA, "Energy and thermal management in mobile systems," 2012.
31. Texas Instruments, TX, "Sensor networks and energy management," 2012.
32. San Diego Gas and Electric, CA, "Energy management in large scale systems using batteries," 2012.
33. Synopsys, CA, "Thermal estimation in SoCs," 2012.
34. Oracle, CA, "Thermal management in servers," 2011.
35. Intel, CA, "Energy management in mobile systems," 2011.
36. IBM Labs, CA, "Optimizing system design for energy efficiency," 2011.
37. Texas Instruments, TX, "Thermal management in heterogeneous SoCs," 2011.
38. GLIF, Brasil, "Energy management in datacenters," 2011.
39. CICC panel on datacenters, CA, "Energy management in datacenters," 2011.
40. AMD, CA, "Energy and thermal management in systems," 2011.
41. Oracle, CA, "Thermal and cooling management in systems," 2011.
42. TU Dortmund, Germany, "Energy and thermal management in systems," 2011.
43. Cisco, CA, "Ultra-fast power gating," 2011.
44. Supercomputing, WA, "Using Green Energy Prediction for Energy Management in Large Scale Distributed Data Center Networks," 2011.
45. Qualcomm, CA, "Ultra-fast power gating," 2011.
46. BAE systems, CA, "System energy management," 2011.
47. Intel, OR, "Efficiency losses in mobile systems," 2011.
48. Ericsson, CA, "Thermal management at system level," 2011.
49. Qualcomm, CA, "Thermal management in heterogeneous 3D MPSOCs," 2011
50. LBNL, CA, "Energy efficient computing and networking in datacenters," 2011
51. EPFL, Switzerland, "Managing environmental variability in 2 & 3D designs," 2011.
52. Cisco, CA, "Energy efficient computing in datacenters," 2011
53. Microsoft Cloud Futures, WA, "Energy efficient computing in datacenters," 2011
54. Huawei, CA, "Energy efficient computing in datacenters," 2011
55. Ericsson, CA, "Energy efficient computing in datacenters," 2011
56. Intel, OR "Energy efficient computing in large scale systems," 2011
57. Qualcomm, "Energy and thermal management in 2 and 3D ICs", 2010.

58. Texas Instruments, “Energy and thermal management in heterogeneous multicore processors,” 2010.
59. WirelessHealth 2010, “Population-aware wireless healthcare networks,” 2010.
60. Microsoft Cloud Computing Futures, “Achieving Energy Efficient Computing for Future Large Scale Applications,” 2010.
61. ASU, AZ, “Energy and Thermal Management,” 2010
62. SRCE, Croatia, “Energy efficient computing in datacenters,” 2010.
63. UC Berkeley, CA, “Energy efficient computing,” 2010.
64. Raytheon, CA, “Energy efficient computing in large scale systems,” 2010
65. Microsoft, WA, “Energy efficient computing in the face of heterogeneous workloads” 2010
66. UW, WA, “CitiSense: Heterogeneous wireless sensing for healthcare applications,” 2010
67. UCSB keynote, CA, “Energy efficient computing,” 2010
68. Yahoo, CA, “Energy efficient computing,” 2010
69. Oracle CA, “Energy efficient computing within virtualization systems,” 2010
70. GE, CA, “Energy efficient computing in datacenters,” 2010
71. EDF, CA, “Energy efficient computing in datacenters,” 2010
72. PG&E, CA, “Energy efficient computing in datacenters,” 2010
73. NSF, DC, “Population-Area Wireless Healthcare Networks,” NSF Workshop on Future Directions in Sensing Systems, 2009.
74. UIUC, IL, “Energy efficient computing,” 2009.
75. UIC, IL, “Energy efficient computing,” 2009.
76. UC Irvine, CA, “Energy efficient computing,” 2009.
77. Princeton University, NJ, “Energy efficient computing,” 2009.
78. Penn State University, PA, “Energy efficient computing,” 2009.
79. CMU, PA, “Energy efficient computing,” 2009.
80. La Jolla Research & Innovation Summit, Venture Capital panel: “Energy Efficient Systems,” 2009.
81. Ericson, “Energy efficient computing,” 2009.
82. IBM Research, Austin, TX, “Energy efficient computing,” 2009.
83. IBM Research, TJ Watson, NY, “Energy efficient computing,” 2009.
84. Lockheed Martin, San Diego, “Energy efficient computing,” 2009.
85. InterDigital, “Energy efficient computing,” 2009.
86. SK Telecom, “Heterogeneous wireless sensor networks,” 2009.
87. On Ramp Wireless, “Heterogeneous wireless sensor networks,” 2009.
88. Northrop Grumman, San Diego, “Energy efficient computing,” 2009.
89. Panasonic, “Energy efficient computing,” 2009.
90. Qualcomm, San Diego, “Power and thermal management in 2D and 3D multicore processors,” 2009.
91. Qualcomm, VC group, “Heterogeneous wireless sensor networks,” 2009.
92. Qualcomm, San Diego, “Wireless healthcare,” 2009.
93. Google, Mountain View, “Energy efficient computing,” 2009.
94. Google, Mountain View, “Power management in operating systems and energy efficient software,” 2009.
95. Sun Microsystems, San Diego, “Energy efficient computing,” 2009.
96. Sun Microsystems, Menlo Park, “Power and thermal management in multicore processors,” 2009.
97. Cisco, “Energy efficient computing,” 2009.
98. Cisco, “Energy management in virtualized systems,” 2009.
99. Cisco, “Wireless healthcare,” 2009.
100. Yahoo, “Energy efficient computing,” 2009.
101. TI, “Energy efficient computing,” 2009.
102. Intel, Santa Clara, “Power management in multicore processors,” 2009.
103. Intel, Hillsborough, “Energy management using virtualization,” 2009.
104. FER, Zagreb, Croatia, “Energy efficient computing,” 2009.
105. USC, CA, “Energy efficient computing,” 2009.
106. UCLA, CA, “Energy efficient computing,” 2009.
107. SPAWAR, San Diego, “Energy efficient computing,” 2009.
108. Workshop on mapping applications to MPSoCs, “Energy and thermal management in MPSoCs,” 2009.

109. UC Berkeley, "Energy management in computing systems," 2008.
110. EPFL, Switzerland, "Resource management in heterogeneous wireless sensor networks," 2008.
111. EPFL, Switzerland, "Thermally-aware OS scheduling for MPSoCs," 2008.
112. Intel – Hillsborough, OR, "Dynamic power management in wireless systems," 2008.
113. Microsoft Research – Redmond, WA, "Resource Management of Heterogeneous Wireless Embedded Systems", 2006.
114. Intel – Folsom, CA, "Resource Management of Heterogeneous Wireless Embedded Systems", 2006.
115. Sun Microsystems – Mountain View, CA, "Managing SOC power and reliability with in-situ telemetry", 2006.
116. HP Labs – Palo Alto, CA, "Resource Management of Heterogeneous Wireless Embedded Systems", 2006.
117. ARM - Irvine, CA, "Modeling power and reliability of SOCs," 2006.
118. Tensilica – Santa Clara, CA, "Modeling power and reliability of SOCs," 2006.
119. Mindspeed – Irvine, CA, "Modeling power and reliability of SOCs," 2006.
120. Sun Microsystems – Mountain View, CA, "Resource Management of Heterogeneous Wireless Embedded Systems", 2006.
121. Ericsson – San Diego, CA: "Heterogeneous sensor networks," 2006.
122. Intel – Santa Clara, CA: "Reliable and low power SOC design", 2005.
123. ST Micro – San Diego, CA: "Reliable and low power SOC design," 2005.
124. Intel – Portland, CA: "Resource Management of Heterogeneous Wireless Embedded Systems", 2005.
125. Freescale – Phoenix, AZ, "Reliable and low power SOC design", 2005.
126. Qualcomm – San Diego, CA, "Analysis of SOC power management," 2005.
127. Sun Microsystems – San Diego, CA: "Reliable and low power SOC design", 2005.
128. DATE'05, Munich, Germany, Special Session Invited paper: "Power management in wireless environments," 2005.
129. EPFL – Lausanne, Switzerland, "Reliable and low power SOC design", 2005.
130. IMEC – Belgium, "Resource Management of Heterogeneous Wireless Embedded Systems", 2005.
131. HP Techcon – Orlando, FL, "Managing resources of HotSpot servers," 2004.
132. University of Washington – Seattle, WA, "Resource management in embedded systems," 2003.
133. USC – Los Angeles, CA: "Resource management in embedded systems," 2003.
134. UC Berkeley – Berkeley, CA, "Energy efficient system design and utilization," 2002.
135. MIT – Cambridge, MA, "Energy efficient system design and utilization," 2002.
136. Stanford University – Stanford, CA, "Resource management in embedded systems," 2002.
137. University of Washington - Seattle, WA, "Energy efficient system design and utilization," 2001.
138. Gatech – Atlanta, GA, "Energy efficient system design and utilization," 2001.
139. UCI – Irvine, CA, "System-level power management," 2001.
140. IBM TJ Watson - Yorktown Heights, NY, "Energy efficient system design and utilization," 2001.
141. Lucent Labs - Murray Hill, NJ, "Energy efficient system design and utilization," 2001.
142. HP Labs – Palo Alto, CA, "Energy efficient system design and utilization," 2001.