Tajana Šimunić Rosing

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INTERESTS energy-efficient computing, computer architecture, embedded systems

PROFESSIONAL EXPERIENCE

05-pres. **UCSD** Full Professor and Fratamico Endowed Chair in the CSE & ECE Departments; IEEE & ACM Fellow
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, acceleration of big data workloads
    - director of $50M DARPA/SRC JUMP 2.0 PRISM Processing with Intelligent Storage and Memory Center
    - lead of Hyperdimensional computing work in $40M DARPA/SRC JUMP 2.0 Cognitive Computing Center
    - hyperdimensional computing grants from DARPA, SRC, NSF; TSMC funded HDC chip tapeout
    - lead Organization & Hierarchy; and Precision Medicine in $40M JUMP CRISP center
    - NSF AI TILOS Research Institute thrusts on chips and networks
    - head of the Large Scale Systems thrust in MuSyC center, with focus on datacenters
    - 10 year NSF ERC CIAN; lead of thrust on energy efficient datacenters; 30 companies, 12 universities
    - funded by NSF, DARPA, SRC, Oracle, Google, Microsoft, TI, Cisco, Qualcomm, CEC, Intel, Panasonic, Ericson, Broadcom, IBM and many others
  - Computing and resource management at and beyond the edge
    - director of $16.3M AI for Healthy Living Center
    - $28M TerraSwarm center; 22 faculty from 10 top institutions in the USA; leading the SmartCities theme
    - led context-aware distributed optimization in the Smart Grid as a part of ARPA-E NODES grant
    - NSF Early wildfire detection with drones and IoT; NSF MetaSense & CitiSense projects focused on mobile air quality sensing; coverage in NY Times and the Wall Street Journal
    - lunded by DARPA, NSF, NIH, ARPA-E, DOE, LANL, CNS, Intel, IBM, TI, UTC, Raytheon, Oracle, Qualcomm, Panasonic, Broadcom, Ericson, Google, Microsoft, and others.
- published over ~420 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, received many 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 $350M
- 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 testing methodology for FPLDs that enabled Altera to get to market 4 months sooner
- designed, evaluated and managed simulation and testing of 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.
Thesis: *Energy Efficient System Design and Utilization*
MS in Engineering Management, Stanford University, 2000.
MS in Electrical and Computer Engineering, University of Arizona, 1993.
BS in Electrical Engineering, Northern Arizona University, 1992.

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JOURNAL PAPERS

1. Weihong Xu, Saransh Gupta, Niema Moshiri, and Tajana Rosing, "RAPIDx: High-performance ReRAM Processing in-Memory Accelerator for Sequence Alignment," IEEE TCAD, 2023.
2. Alireza Amirshahi, Anthony Thomas, Amir Aminifar, Tajana Rosing, David Atienza. "M2D2: Maximum-Mean-Discrepancy Decoder for Temporal Localization of Epileptic Brain Activities," IEEE Journal of Biomedical and Health Informatics, 2022
3. X. Yu, K. Ergun, X. Song, L. Cherkasova, T. Rosing, "Automating and Optimizing Reliability-Driven Deployment in Energy-Harvesting IoT Networks," IEEE Transactions on Network and Service Management, 2022
4. O. Gungor, T. Rosing, B. Aksanli, "STEWART: STacking Ensemble for White-Box AdversaRial Attacks Towards more resilient data-driven predictive maintenance." Computers in Industry, Elsevier 2022.
5. M Ostertag, N. Atanasov, T. Rosing," Trajectory Planning and Optimization for Minimizing Uncertainty in Persistent Monitoring Applications," Journal of Intelligent & Robotic Systems, 2022.
6. K. Ergun, R. Ayoub, P. Mercati, T. Rosing, "Dynamic Reliability Management of Multi-Gateway IoT Edge Computing Systems," Special Issue of IEEE Internet of Things Journal, 2022.
7. J. Kang, B. Khaleghi, Y. Kim, T. Rosing, "OpenHD: A GPU-Powered Framework for Hyperdimensional Computing," Special Issue on Software, Hardware, and Applications for Neuromorphic Computing in IEEE Transactions on Computing, 2022.
8. K. Ergun, R.Ayoub, P. Mercati, T. Rosing, "Reinforcement Learning Based Reliability-Aware Routing in IoT Networks", Elsevier Ad Hoc Networks, 2022.
9. Justin Morris, Yilun Hao, Saransh Gupta, Behnam Khaleghi, Baris Aksanli and Tajana Rosing, "Stochastic-HD: Leveraging Stochastic Computing on the Hyper-Dimensional Computing Pipeline," Special Issue of Frontiers in Neuroscience, section on Neuromorphic Engineering, 2022.
10. Jones, Derek; Allen, Jonathan; Yang, Yue; Bennett, W.F.; Gokhale, Maya; Moshiri, Niema; Rosing, Tajana, "Accelerators for Classical Molecular Dynamics Simulations of Biomolecules," Journal of Chemical Theory and Computation, 2022.
11. George Armstrong , Cameron Martino , Justin Morris , Behnam Khaleghi , Jaeyoung Kang , Jeff Dereus , Mr. Qiyun Zhu , Daniel Roush , Daniel McDonald , Dr. Antonio Gonzalez , Dr. Justin P Shaffer , Carolina Carpenter , Dr. Mehrbod Estaki , Dr. Stephen Wandro , Sean Eilert , Ameen Akel , Justin Eno , Ken Curewitz , Austin D Swafford , Niema Moshiri , Tajana Rosing , Rob Knight, " Swapping metagenomics preprocessing pipeline components offers speed and sensitivity increases," American Society for Microbiology mSystems Journal, 2022. 6.496 impact factor
12. J. Morris, K. Ergun, B. Khaleghi, M. Imani, B. Aksanli, T. Rosing, "HyDREA:Utilizing Hyperdimensional Computing For A More Robust and Efficient Machine Learning System," Special issue of ACM TECS'22.
13. S. Gupta, B. Khaleghi, S. Salamat, J. Morris, R. Ramkumar, J. Yu, A. Tiwari, M. Imani, B. Aksanli, T. Rosing, "Store-n-Learn: Classification and Clustering with Hyperdimensional Computing across Flash Hierarchy," Special issue of ACM TECS, 2022.
14. O. Gungor, T. Rosing, B. Aksanli, "RESPIRE++: Robust Indoor Sensor Placement Optimization under Distance Uncertainty", **Invited paper to IEEE Sensors Journal, 2022.**
15. A. Khachiyan, A. Thomas, H. Zhou, G. Hanson, A. Cloninger, T. Rosing, A. Khandelwal, "Using Neural Networks to Predict Micro-Spatial Economic Growth," American Economic Review Insights, 2022.
16. A. Thomas, S. Dasgupta, T. Rosing,"A Theoretical Perspective on Hyperdimensional Computing," Journal of Artificial Intelligence Research, 2021.
17. S. Gupta, M. Imani, J. Sim, A. Huang, F. Wu, Y. Kim, T. Rosing, "COSMO: Computing with Stochastic Numbers in Memory," JETC 2021.
18. O. Gungor, T. Rosing, B. Aksanli, "DOWELL: Diversity-induced Optimally Weighted EnsembLe Learner for Predictive Maintenance of Industrial Internet of Things Devices", IEEE IoT Journal 2021.
19. S. Salamat, H. Zhang, YS Ki, T. Rosing, "NASCENT2: Generic Near-storage Sort Accelerator for Data Analytics on SmartSSD," IEEE Transactions on Reconfigurable Technology and Systems, 2021.
20. J. Morris, Y. Hao, M. Imani, B. Aksanli, T. Rosing, "Locality-based Encoder and Model Quantization for Efficient Hyper-Dimensional Computing," IEEE TCAD 2020.
21. X. Yu, K. Ergun, L. Cherkasova, T. Rosing, "Optimizing Sensor Deployment and Maintenance Costs for Large-Scale Environmental Monitoring," IEEE TCAD, 2020.
22. Sahand Salamat, Mohsen Imani, and Tajana Rosing, "Accelerating hyperdimensional computing on FPGAs by exploiting computational reuse," IEEE Transactions on Computing, 2020.

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23. M. Imani, S. Bosch, S. Datta, S. Ramakrishna, S. Salamat, J. Rabaey, T. Rosing, "QuantHD: A Quantization Framework for Hyperdimensional Computing", IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD), 2019.
24. M. Imani, S. Gupta, S. Sarama, T. Rosing, "NVQuery: Efficient Query Processing in Non-Volatile Memory," IEEE TCAD, 2019.
25. M. Imani, X. Yin, J, Messerly, S. Gupta, M. Nemier, X. S. Hu, T. Rosing, "SearcHD: A Memory-Centric Hyperdimensional Computing with Stochastic Training", IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD), 2019.
26. D. Peroni, M. Imani, H. Nejatollahi, N. Dutt, T. Rosing, "Data Reuse for Accelerated Approximate Warps", IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD), 2019.
27. Yeseong Kim, Mohsen Imani, and Tajana S. Rosing, "Image Recognition Accelerator Design Using In-Memory Processing," IEEE MICRO, 2019.
28. 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.
29. M. Imani, J. Morris, H. Shu, S. Li, T. Rosing, "Efficient Associative Search in Brain-Inspired Hyperdimensional Computing", IEEE Design & Test (D&T), 2019.
30. 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 Locations for Ambient Measurements and Personal Exposure Monitoring," Atmospheric Measurement Techniques Journal, 2019.
31. S. Gupta, M. Imani, T. S. Rosing, "NNPIM: A Processing In-Memory Architecture for Neural Network Acceleration," IEEE Transaction on Computers, 2019.
32. D. Peroni, M. Imani, T. Rosing, "Runtime Efficiency-Accuracy Trade-off Using Configurable Floating Point Multiplier", IEEE TCAD, 2018.
33. 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.
34. Christine Chan, Alper Sinan Akyurek, Baris Aksanli, and Tajana S. Rosing. "Optimal Performance-Aware Cooling on Enterprise Servers," IEEE TCAD'18.
35. A. Sinan Akyurek and Tajana S. Rosing, "Optimal Packet Aggregation in Wireless Networks", IEEE Transactions on Mobile Computing, 2018.
36. M. Imani, Shruti Patil, T. Rosing, "Approximate Computing using Multiple-Access Single-Charge Associative Memory" IEEE Transaction on Emerging Topics in Computing (TETC), 2017.
37. M. Imani, D. Peroni, T. Rosing "NVALT: Approximate Lookup Table for GPU Acceleration", IEEE Embedded System Letter (ESL), 2017.
38. M. Imani, A. Rahimi, Hwang, T. S. Rosing, J.M. Rabaey, "Low-Power Sparse Hyperdimensional Encoder for Language Recognition," IEEE Design & Test, 2017.
39. 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.
40. 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.
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42. 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.
43. 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.
44. A. Sinan Akyurek and Tajana Simunic Rosing, "Optimal Distributed Nonlinear Battery Control", IEEE Journal of Emerging and Selected Topics in Power Electronics, 2017.
45. 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.
46. P. Mercati, F. Paterna, A. Bartolini, L. Benini, T. Simunic Rosing, "WARM: Workload-Aware Reliability Management in Linux/Android," IEEE TCAD 2016.

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47. 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.
48. Mohsen Imani, Shruti Patil, Tajana S. Rosing, "Ultra-low power FinFET based SRAM cell employing sharing current concept", Microelectronic Reliability Elsevier Journal, 2015
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50. 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.
51. R. Ayoub, R. Nath, T. Simunic Rosing, "CoMETC: Coordinated Management of Energy, Thermal, & Cooling in Servers" TODAES'13.
52. A. Kahng, S. Kang, T. Simunic Rosing, R. Strong, "Many-Core Token-Based Adaptive Power Gating," IEEE TCAD'13.
53. 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.
54. S. Sharifi, T. Simunic Rosing, "PROMETHEUS: A Proactive Method for Thermal Management of Heterogeneous MPSoCs," IEEE TCAD'13.
55. 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.
56. 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.
57. 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.
58. R. Ayoub, K. Indukuri, T. Simunic Rosing, "Temperature Aware Dynamic Workload Scheduling in Multisocket CPU Servers," IEEE TCAD, 2011.
59. E. Regini, D. Lim, T. Simunic Rosing, "Energy management in heterogeneous wireless sensor networks," JOLPE, 2011.
60. 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***
61. 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.
62. S. Sharifi, T. Simunic Rosing, "Accurate direct and indirect on-chip temperature sensing for efficient dynamic thermal management," IEEE TCAD, 2010.
63. A. Coskun, T. Simunic Rosing, "Utilizing Predictors for Efficient Thermal Management in Multiprocessor SoCs," IEEE TCAD, 2009.
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65. A. Coskun, T. Simunic Rosing, K. Whisnant, K. Gross, "Static and dynamic temperature-aware scheduling for multiprocessor SoCs," IEEE TVLSI, 2008.
66. T. Simunic Rosing, K. Mihic, G. De Micheli, "Power and reliability management of SOCs," IEEE Transactions on VLSI, 2007.
67. G. Park, T. Simunic Rosing, M. Todd, C. Farrar, W. Hodgkiss, "Energy Harvesting for Structural Health Monitoring in Sensor Networks," ASCE Journal, 2007.
68. 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.
69. T. Simunic, S. Boyd, P. Glynn: "Managing Power Consumption in Networks on Chips," IEEE Transactions on VLSI, pp. 96- 107, Jan 2004.

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70. 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.
71. 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.
72. 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.
73. T. Simunic, L. Benini, P. Glynn, G. De Micheli: "Event-Driven Power Management", IEEE Transactions on CAD, pp.840-857, July 2001.
74. T. Simunic, M. Smith: "Dynamic Power Management at HP", Invited Paper in Special Issue of Design and Test Journal, 2001.
75. T. Simunic, L. Benini, G. De Micheli: "Energy-Efficient Design of Battery-Powered Embedded Systems", Special Issue of IEEE Transactions on VLSI, 2001.
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CONFERENCE PAPERS

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2. M. Zhou, X. Wang, T. Rosing, "OverlaPIM: Overlap Optimization for Processing In-Memory Neural Network Acceleration," DATE 2023.
3. B. Khaleghi, T. Zhang, C. Martino, G. Armstrong, A. Akel, K. Curewitz, J. Eno, S. Eilert, R. Knight, N. Moshiri, T. Rosing, "SALIENT: Ultra-Fast FPGA-based Short Read Alignment", **best paper nomination**, FPT 2022.
4. J. Kang, W. Xu, W. Bittremieux, T. Rosing, "Massively Parallel Open Modification Spectral Library Searching with HD Computing," PACT'22.
5. J. Kang, M. Zhou, A. Bhansali, W. Xu, A. Thomas and T. Rosing, "RelHD: A Lightweight Graph-based Learning with Hyperdimensional Computing", ICCD 2022.
6. U. Mallappa, P. Gangwar, B. Khaleghi, and T. Rosing, "TermiNETor: Early Convolution Termination for Efficient Deep Neural Networks", ICCD 2022
7. B. Khaleghi, T. Zhang, N. Shao, A. Akel, K. Curewitz, J. Eno, S. Eilert, N. Moshiri, T. Rosing, "FAST: FPGA-based Acceleration of Genomic Sequence Trimming", IEEE BioCAS, 2022.
8. O. Gungor, T. Rosing, B. Aksanli, "DENSE-DEFENSE: Diversity Promoting Ensemble Adversarial Training Towards Effective Defense", IEEE Sensors 2022.
9. J. Liu, X. Yu, T. Rosing, "Self-Train: Self-Supervised On-Device Training for Post-Deployment Adaptation", IEEE SmartIoT, 2022
10. Q. Zhao, K. Lee, J. Liu, M. Huzaifa, X. Yu, T. Rosing, "FedHD - Federated Learning with Hyperdimensional Computing Demo", Mobicom, 2022
11. E. Ekaireb, X. Yu, K. Ergun, Q. Zhao, K. Lee, M. Huzaifa, T. Rosing, "ns3-fl: Simulating Federated Learning with ns-3", Workshop on ns-3 (WNS3), 2022
12. Arpan Dutta, Saransh Gupta, Behnam Khaleghi, Rishikanth Chandrasekaran, Weihong Xu, Tajana Rosing,"HDnn PIM: Efficient in Memory Design of Hyperdimensional Computing with Feature Extraction," GLVLSI'22.
13. A. Thomas, S. Dasgupta, T. Rosing, "A Theoretical Perspective on Hyperdimensional Computing," **Invited paper to a special session of the International Joint Conference on Artificial Intelligence, IJCAI 2022**
14. Weihong Xu, Jaeyoung Kang and Tajana Rosing, "A Near-Storage Framework for Boosted Data Preprocessing of Mass Spectrum Clustering," DAC, 2022
15. Behnam Khaleghi, Uday Mallappa, Duygu Nur Yaldiz, Haichao Yang, Monil Shah, Jaeyoung Kang and Tajana Rosing, "PatterNet: Explore and Exploit Filter Patterns for Efficient Deep Neural Networks," DAC'22
16. Rishikanth Chandrasekaran, Kazim Ergun, Jihyun (Lucy) Lee, Dhanush Nanjunda, Jaeyoung Kang and Tajana Rosing, "FHDnn: Communication Efficient and Robust Federated Learning for AIoT Networks," DAC'22.
17. Behnam Khaleghi, Jaeyoung Kang, Hanyang Xu, Justin Morris and Tajana Rosing, "GENERIC: Highly Efficient Learning Engine on Edge using Hyperdimensional Computing," DAC'22.
18. Minxuan Zhou, Weihong Xu, Jaeyoung Kang, and Tajana Rosing, "TransPIM: A Memory-based Acceleration via Software-Hardware Co-Design for Transformers", HPCA'22.

19. Yizhou Wei, Minxuan Zhou, Sihang Liu, Korakit Seemakhupt, Tajana Rosing and Samira Khan. "PIMProf: An Automated Program Profiler for Processing-in-Memory Offloading Decisions", DATE'22.
20. Yang Ni, Yeseong Kim, Tajana Rosing and Mohsen Imani, "Online Performance and Power Prediction for Edge TPU via Comprehensive Characterization," DATE'22.
21. Yang Ni, Yeseong Kim, Tajana Rosing and Mohsen Imani," Algorithm-Hardware Co-Design for Efficient Brain-Inspired Hyperdimensional Learning on Edge," **Best Paper Award** at DATE'22.
22. Justin Morris, Hin Wai Lui, Kenneth Stewart, Behnam Khaleghi, Anthony Thomas, Thiago Marback, Baris Aksanli, Emre Neftci, and Tajana Rosing, "HyperSpike: HyperDimensional Computing for More Efficient and Robust Spiking Neural Networks, DATE'22.
23. Michael Ostertag, Jason Ma, Tajana S. Rosing, "Remote Sensing with UAV and mobile recharging vehicle rendezvous," DATE'22.
24. S. Xia, R. Chandrasekaran, Y. Liu, C. Yang, T. Rosing, X. Jiang, "Drone-based System for Intelligent and Autonomous Homes," ACM SenSys 2021; **Best demo award**
25. J. Kang, B. Khaleghi, Y. Kim, T. Rosing, "XCelHD: Efficient GPU-Powered Hyperdimensional Computing with Parallelized Training," ASPDAC'22.
26. X. Liu, M. Zhou, R. Ausavarungnirun, S. Eilert, A. Akel, T. Rosing, V. Narayanan, J. Zhao, "Mirage: A Highly Parallel and Flexible RRAM Accelerator," HPCA'21
27. S. Gupta, R. Camarota, T. Rosing, "Accelerating Fully Homomorphic Encryption with Processing in Memory," **Invited paper to special session at DAC'21.**
28. M. Zhou, Y. Guo, W. Xu, B. Li, K. Eliceiri, T. Rosing, "MAT: Processing In-Memory Acceleration for Long-Sequence Attention," DAC'21.
29. X. Yu, W. Xu, L. Cherkasova, T. Rosing, "Automating Reliable and Fault-Tolerant Design of LoRa-based IoT Networks," CNSM'21. **Best paper award**
30. Yeseong Kim, M. Imani, S. Gupta, M. Zhou, T. Rosing, "Massively Parallel Big Data Classification on a Programmable Processing In-Memory Architecture," ICCAD 21.
31. A. Paul, B. Khaleghi, G. Hota, Y. Xu, T. Rosing, Gert Cauwenberghs, "Attention State Classification with In-Ear EEG," BioCAS'21.
32. S. Salamat, N. Moshiri, T. Rosing, "FPGA Acceleration of Pairwise Distance Calculation for Viral Transmission Clustering" BIOCAS'21.
33. O. Gungor, B. Aksanli, T. Rosing, "CAHEROS: Constraint-Aware Heuristic Approach for Robust Sensor Placement" IEEE SENSORS'21.
34. O. Gungor, B. Aksanli, T. Rosing, "ENFES: Ensemble FEw-Shot Learning for Intelligent Fault Diagnosis with Limited Data," IEEE SENSORS'21.
35. Justin Morris, Si Thu Kaung Set, Gadi Rosen, Mohsen Imani, Baris Aksanli and Tajana Rosing," AdaptBit-HD: Adaptive Model Bitwidth for Hyperdimensional Computing," ICCD'21
36. Yilun Hao, Saransh Gupta, Justin Morris, Behnam Khaleghi, Baris Aksanli and Tajana Rosing:"Stochastic-HD: Leveraging Stochastic Computing on Hyper-Dimensional Computing," ICCD'21.
37. A Sokolova, M Imani, A Huang, R Garcia, J Morris, T Rosing, B Aksanli, "MACcelerator: Approximate Arithmetic Unit for Computational Acceleration," ISQED'21.
38. M. Zhou, L. Wu, M. Li, N. Moshiri, K. Skadron, T. Rosing, "Ultra Efficient Acceleration for De Novo Genome Assembly via Near-Memory Computing," PACT'21
39. M. Zhou, G. Chen, M. Imani, S. Gupta, W. Zhang, T. Rosing, "PIM-DL: Boosting DNN Inference on Digital Processing In-Memory Architectures via Data Layout Optimizations," PACT'21.
40. S. Gupta, R. Camarota, T. Rosing, "Priv-PIM: Privacy-Preserved Processing in-Memory," SPSL'21.
41. Xiao Liu, Minxuan Zhou, Rachata Ausavarungnirun, Sean Eilert, Ameen Akel, Tajana Rosing, Vijaykrishnan Narayanan, Jishen Zhao, "FPRA: A Fine-grained Parallel RRAM Architecture," ISLPED'21.
42. K. Ergun, R. Ayoub, P. Mercati, T. Rosing, "Improving Mean Time to Failure of IoT Networks with Reliability-Aware Routing," CPSIoT 2021.
43. J. Ma, M. Ostertag, D. Bharadia, T. Rosing, "Frequency-aware Trajectory and Power Control for Multi-UAV Systems," INFOCOM-DroneCom'21.
44. Khaleghi B, Akel A, Curewitz K, Eno J, Eilert S, Moshiri N, Rosing T., "FPGA-based acceleration of primer trimming," 28th International Dynamics & Evolution of Human Viruses Conference 2021.

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45. Kang J, Young C, Morris J, Akel A, Eilert S, Eno J, Curewitz K, Moshiri N, Rosing T., "GPU-Powered Phylogenetic Analysis for Large-scale Genomic Sequences ," Int'l Dynamics & Evolution of Human Viruses Conf, 2021. Poster.
46. S. Salamat, N. Moshiri, T. Rosing, " FPGA-based acceleration of pairwise distance calculation for viral transmission clustering," International Dynamics & Evolution of Human Viruses Conf., 2021. Poster
47. O. Gungor, T. Rosing, B. Aksanli, "OPELRUL: Optimally Weighted Ensemble Learner for Remaining Useful Life Prediction of Industrial Machinery", IEEE International Conference on Prognostics and Health Management, 2021.
48. Mohsen Imani*, Zhuowen Zou, Samuel Bosch, Sanjay Anantha Rao, Sahand Salamat, Venkatesh Kumar, Yeseong Kim*, and Tajana Rosing, "Revisiting HyperDimensional Learning for FPGA and Low-Power Architectures," HPCA'21.
49. Namiko Matsumoto, Anthony Thomas, Tara Javidi and Tajana Rosing, "Hyperdimensional Computing and Spectral Learning," CogArch'21.
50. Sahand Salamat, Behnam Khaleghi, Armin Haj Aboutalebi, Joo Hwan Lee, Yang Seok Ki, Tajana Rosing, "NASCENT: Near-Storage Acceleration of Database Sort on SmartSSD," FPGA 2021.
51. M. Zhou, M. Li, M. Imani, T. Rosing, "HyGraph: Accelerating Graph Processing with Hybrid Memory-centric Computing," DATE'21.
52. Sahand Salamat, Jaeyoung Kang, Yeseong Kim, Mohsen Imani, Niema Moshiri and Tajana Rosing, "FPGA Acceleration of Protein Back-translation and Alignment," DATE'21.
53. Behnam K., Hanyang Xu, Justin Morris, Tajana S. Rosing, "tiny-HD: Ultra-Efficient Hyperdimensional Computing Engine for IoT Applications," DATE'21.
54. R. Garcia, F. Asgarinejad, B. Khaleghi, T. Rosing, M. Imani, "TruLook: A Framework for Configurable GPU Approximation", DATE, 2021.
55. Justin Morris, Kazim Ergun, Behnam Khaleghi, Mohsen Imani, Baris Aksanli, Tajana Rosing, "HyDREA: Towards More Robust and Efficient Machine Learning Systems with Hyperdimensional Computing," DATE'21.
56. M. Zhou, S. Gupta, M. Imani, Y. Kim, T. Rosing,"DP-Sim:A Full-stack Simulation Infrastructure for Digital Processing In-Memory Architecture," ASPDAC 2021.
57. S. Salamat, S. Shubhi, B. Khaleghi, T. Rosing, "Residue-Net: Multiplication-free Neural Network by In-situ, No-loss Migration to Residue Number Systems", ASP-DAC, 2021.
58. Y. Guo, S. Gupta, J. Kang, M. Imani, Y. Kim, J. Morris, T. Rosing, "HyperRec: Efficient Recommender Systems with Hyperdimensional Computing," ASPDAC 2021.
59. K. Ergun, R. Ayoub, P. Mercati, D. Liu, T. Rosing, "Energy and QoS-Aware Dynamic Reliability Management of IoT Edge Computing Systems," ASPDAC 2021.
60. Saransh Gupta, Mohsen Imani, Behnam Khaleghi, Niema Moshiri, and Tajana S. Rosing, "RAPIDx: A ReRAM Processing in-Memory Architecture for DNA Short Read Alignment," American Society of Human Genetics (ASHG), 2020. Poster
61. Salamat S, Kang J, Kim Y, Imani M, Moshiri N, Rosing T., "FPGA Acceleration of Protein Back-Translation and Alignment," American Society of Human Genetics (ASHG) 2020. Poster.
62. F. Asgarinejad, A. Thomas, T. Rosing. Detection of Epileptic Seizures from Surface EEG using Hyperdimensional Computing, EMBC, 2020.
63. B. Khaleghi, S. Salamat, T. Rosing, "Revisiting FPGA Routing under Varying Operating Conditions", FPT, 2020.
64. Y. Guo, X. Yu, K. Chaudhuri, T. Rosing, "Efficient Distributed Training in Heterogeneous Mobile Networks with Active Sampling," MSN'20.
65. X. Yu, X. Song, L. Cherkasova, T. Rosing, "Reliability-Driven Deployment in Energy-Harvesting Sensor Networks," CNSM'20.
66. K. Ergun, X. Yu, N. Nagesh, L. Cherkasova, P. Mercati, R.Ayoub, T. Rosing, "Simulating Reliability of IoT Networks with RelIoT", IEEE 50th Conference on Dependable Systems and Networks (DSN), 2020.
67. K. Ergun, X. Yu, N. Nagesh, L. Cherkasova, P. Mercati, R.Ayoub, T. Rosing, "RelIoT: Reliability Simulator for IoT Networks", International Conference on Internet of Things (ICIOT), 2020.
68. M. Imani, S. Pampana, S. Gupta, M. Zhou, Y. Kim, T. Rosing, "DUAL: Acceleration of Clustering Algorithms using Digital-based Processing In-Memory," MICRO 2020.
69. J. Morris, Y. Hao, S. Gupta, R. Ramkumar, J. Yu, M. Imani, B. Aksanli, T. Rosing, "Multi-label HD Classification in 3D Flash," VLSI-SOC 2020, **Invited paper**.

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70. Y. Guo, M. Liu, T. Yang, T. S. Rosing, “Improved Schemes for Episodic Memory based Lifelong Learning Algorithm,” NeurIPS 2020, **Spotlight presentation**.
71. O. Gungor, T. Rosing, B. Aksanli, “RESPIRE: Robust SEnSor Placement OptImization in PRobabilistic Environments,” IEEE Sensors 2020. **Best paper nomination**
72. O. Gungor, J. Garnier, T. Rosing, B. Aksanli, “LENARD: Lightweight ENsemble LeARner for MeDium-term Electricity Consumption Prediction,” IEEE SmartGridComm, 2020.
73. Y. Guo, X. Yu, K. Choudhuri, T. Rosing, “Efficient Distributed Training in Heterogeneous Mobile Networkswith Active Sampling,” IEEE Mobility, Sensing and Networking 2020.
74. Saransh Gupta, Mohsen Imani, Hengyu Zhao, Fan Wu, Jishen Zhao, and Tajana Rosing, “Implementing Binary Neural Networks in Memory with Approximate Accumulation,” ISLPED 2020.
75. B. Khaleghi, S. Salamat, A. Thomas, F. Asgarinejad, Y. Kim, T. Rosing, "SHEARer: Highly-Efficient Hyperdimensional Computing by Software-Hardware Enabled Multifold AppRoximation", ISLPED, 2020.
76. Saransh Gupta, Justin Morris, Mohsen Imani, Ranganathan Ramkumar, Jeffrey Yu, Aniket Tiwari, Baris Aksanli, Tajana Rosing , "THRIFTY: Training with Hyperdimensional Computing across Flash Hierarchy," ICCAD 2020.
77. M. Ostertag, S. Al-Doweeshi, T. Rosing, “Efficient Training on Edge Devices Using Online Quantization,” DATE 2020.
78. Yunhui Guo, Yandong Li, Liqiang Wang, Tajana Rosing, "AdaFilter: Adaptive Filter Fine-tuning for Deep Transfer Learning," AAAI 2020.
79. Yunhui Guo, Noel C. Codella, Leonid Karlinsky, James V. Codella, John R. Smith, Kate Saenko, Tajana Rosing, Rogerio Feris , "A Broader Study of Cross-Domain Few-Shot Learning," ECCV 2020.
80. M. Imani, M. Samragh, Y. Kim, S. Gupta, F. Koushanfar, T. Rosing “Deep Learning Acceleration with Neuron-to-Memory Transformation”, HPCA, 2020.
81. Mohsen Imani*, Saikishan Pampana, Saransh Gupta, Minxuan Zhou, Yeseong Kim*, and Tajana Rosing, "DUAL: Acceleration of Clustering Algorithms using Digital-based Processing In-Memory," HPCA’20.
82. B. Khaleghi, M. Imani, T. Rosing “Prive-HD: Privacy-Preserved Hyperdimensional Computing”, DAC, 2020.
83. H. Nejatollahi, S. Gupta, M. Imani, R. Cammarota*, T. Rosing, N. Dutt “CryptoPIM: In-Memory Acceleration for RLWE Lattice-based Cryptography”, **best paper award**, DAC, 2020.
84. S. Gupta, M. Imani, J. Sim, A. Huang, F. Wu, H. Najafi, T. Rosing, “SCRIMP: A General Stochastic Computing Architecture using ReRAM in-Memory Processing”, DATE, 2020.
85. Y. Kim, M. Imani, N. Moshiri*, T. Rosing, “GenieHD: Efficient DNA Pattern Matching Accelerator Using Hyperdimensional Computing”, **best paper nomination**, DATE, 2020.
86. 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
87. B. Khaleghi, S. Salamat, M. Imani, T. Rosing, "FPGA Energy Efficiency by Leveraging Thermal Margin", ICCD, 2019.
88. K. Ergun, R.Ayoub, P. Mercati, T. Rosing, “Dynamic Optimization of Battery Heath in IoT Networks”, ICCD’19.
89. R. Chandrasekaran, Y. Guo, A. Thomas, M. Menarini, M. Ostertag, Y. Kim, T. S. Rosing, “Efficient Sparse Processing in Smart Home Applications,” ACM SenSys ML, 2019.
90. M. Imani, J. Morris, S. Bosch, H. Shu, G. De Micheli, T. S. Rosing, “AdaptHD: Adaptive Efficient Training for Brain-Inspired Hyperdimensional Computing,” BioCAS, 2019.
91. M. Imani**,** S. Gupta, T. Rosing “Digital-based Processing In-Memory: A Highly-Parallel Accelerator for Data Intensive Applications”, ACM International Symposium on Memory Systems (MEMSYS), 2019.
92. 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 2019
93. M Imani, S Gupta, Y Kim, T Rosing, “Deep Learning Acceleration using Digital-Based Processing In-Memory,” SOCC 2020.
94. S. Salamat, B. Khaleghi, M. Imani, T. Rosing, "Workload-Aware Opportunistic Energy Efficiency in Multi-FPGA Platforms", ICCAD, 2019.
95. M Imani, S Bosch, M Javaheripi, B Rouhani, X Wu, F Koushanfar, T. Rosing, “Semihd: Semi-supervised learning using hyperdimensional computing,” ICCAD 2019.
96. S Gupta, M Imani, T Rosing, “Exploring processing in-memory for different technologies,” GLVLSI, 2019.

97. J.Morris, M. Imani, S. Bosch, A. Thomas, H. Shu, T. Rosing, “CompHD: Efficient Hyperdimensional Computing Using Model Compression”. IEEE/ACM International Symposium on Low Power Electronics and Design (ISLPED), 2019.
98. J. Sim, M. Kim, Y. Kim, S. Gupta, B. Khaleghi, T. Rosing, "Multi-bit Parallelized Sensing for Processing in Non-volatile Memory", NVMW, 2019.
99. J Sim, M Imani, W Choi, Y Kim, T Rosing, “Current-sensing efficient adder for processing-in-memory design,” NVM 2019.
100. Mohsen Imani, Saransh Gupta, Yeseong Kim, and Tajana S. Rosing, "FloatPIM: In-Memory Acceleration of Deep Neural Network Training with High Precision", ISCA, 2019
101. 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
102. 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
103. 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
104. Mohsen Imani, Ricado 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
105. Xiao Liu, Minxuan Zhou, Tajana Rosing, and Jishen Zhao, "HR3AM: A Heat Resilient Design for RRAM-based Neuromorphic Computing", ISLPED 2019
106. 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
107. Mohsen Imani, Tarek Nassar, Justin Morris, Tajana Rosing, "DNA Sequencing using Brain-inspired Hyperdimensional Computing", GOMACTech Conference, 2019
108. Mohsen Imani, Yeseong Kim, Suransh Gupta, Daniel Peroni, and Tajana S. Rosing, "In-Memory Acceleration of Deep Neural Network", GOMACTech Conference, 2019
109. 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
110. 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
111. 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), 2019.
112. 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
113. Mohsen Imani, Alice Sokolova, Ricado 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
114. 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. **Best paper nomination**
115. 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
116. Michael H Ostertag, Nikolay Atanasov, Tajana Simunic Rosing, "Robust Velocity Control for Minimum Steady State Uncertainty in Persistent Monitoring Applications", American Controls Conference, 2019. **Best poster award**
117. 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
118. 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

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119. 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
120. 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
121. 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
122. 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
123. 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
124. 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
125. M. Imani, M. Samragh, Y. Kim, S. Gupta, F. Koushanfar, T. Rosing, "A Fully Digital In-Memory Acceleration of Deep Neural Network" Non-Volatile Memory Workshop (NVMW). 2019.
126. Daniel Peroni, Mohsen Imani, Tajana Rosing, "ALook: Adaptive Lookup for GPGPU Acceleration", IEEE Asia and South Pacific Design Automation Conference (ASP-DAC), 2019
127. 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
128. 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
129. Joonseop Sim, Mohsen Imani, Woojin Choi, Yeseong Kim, Tajana Rosing, "LUPIS: Latch-Up Based Ultra Efficient Processing-in-Memory System", **Best paper nomination,** ISQED'18.
130. Minxuan Zhou, Mohsen Imani, Saransh Gupta, and Tajana Rosing, "GAS: A Heterogeneous Memory Architecture for Graph Processing," ISLPED '18.
131. Mohsen Imani, Tarek Nassar, Abbas Rahimi, Tajana Rosing "HDNA: Energy-Efficient DNA Sequencing Using Hyperdimensional Computing", IEEE International Conference on Biomedical and Health Informatics (BHI), 2018.
132. M. Imani, Y. Kim, T. Rosing, "Visual Object Recognition Accelerator Based on Approximate In-Memory Processing", Non-Volatile Memory Workshop (NVMW), 2018.
133. 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 .
134. M. Imani, S. Gupta, T. Rosing, "Accelerating Multiplication and Parallelizing Operations in Non-Volatile Memory" Non-Volatile Memory Workshop (NVMW), 2018.
135. M. Imani, C. Huang , D. Kong, T. Rosing, "Hierarchical Hyperdimensional Computing for Energy Efficient Classification", IEEE/ACM Design Automation Conference (DAC), 2018.
136. M. Imani, R. Garcia , S. Gupta, T. Rosing, "Configurable Floating Point Multiplier for Approximate Computing", IEEE/ACM Design Automation Conference (DAC), 2018.
137. S. Gupta, M. Imani, T. Rosing, "Processing In-Memory Architecture for Multiple Memory Technology", IEEE/ACM Design Automation Conference (DAC), 2018.
138. 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.
139. 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.
140. 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.
141. S. Gupta, M. Imani, T. Rosing, "FELIX: Fast and Energy-Efficient Logic in Memory" IEEE/ACM International Conference On Computer Aided Design (ICCAD), 2018.

142. 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.
143. Y. Kim, M. Imani, T. Rosing, "Efficient Human Activity Recognition Using Hyperdimensional Computing", IEEE Conference on Internet of Things (IoT), 2018.
144. 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).
145. 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.
146. M. Imani, D. Peroni, T. Rosing, "Resistive Content Addressable Memory for Configurable Approximation", GOMACTech Conference, 2018.
147. M. Imani, M. Masich, T. Rosing, "Training Acceleration of Deep Neural Network on Configurable GPGPU" Techon SRC Conference, 2018 .
148. 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.
149. 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.
150. M. Imani, D. Peroni, T. Rosing, "Program Acceleration Using Nearest Distance Associative Search", IEEE International Symposium on Quality Electronic Design (ISQED), 2018.
151. 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.
152. Y. Kim, A. Moore, E. Shriver, T. S. Rosing, "P4: Phase-Based Power/Performance Prediction of Heterogeneous Systems via Neural Networks," ICCAD'17.
153. 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.
154. C. Chan, M. Ostertag, A. S. Akyurek, T. S. Rosing. "Context-Aware System Design," Invited paper to SPIE 2017.
155. B. Aksanli, J. Venkatesh, C. Chan, A. S. Akyurek, T. S. Rosing, "Context-Aware and User-Centric Residential Energy Management," PerIoT, 2017.
156. N. Mousavi, B. Aksanli, A. S. Akyurek, T. S. Rosing, "Accuracy-Resource Tradeoff for Edge Devices in Internet of Things," SmartEdge 2017.
157. W. Cui, Y. Kim, T. S. Rosing, "Cross-Platform Machine Learning Characterization for Task Allocation in IoT Ecosystems," **Best paper award**, IEEE CCWC, 2017.
158. M. Imani, A. Rahimi, D. Kong, T. Rosing, J. M. Rabaey "Exploring Hyperdimensional Associative Memory", HPCA'17.
159. M. Imani, S. Gupta, T. Rosing "Ultra-Efficient Processing In-Memory for Data Intensive Applications", DAC'17.
160. M. Imani, D. Peroni, T. Rosing "CFPU: Configurable Floating Point Multiplier for Energy-Efficient Computing", DAC'17 (**Best poster at ResearchExpo**).
161. Y. Kim, M. Imani, T. Rosing "ORCHARD: Visual Object Recognition Accelerator Based on Approximate In-Memory Processing", ICCAD'17.
162. Mohsen Imani, Yeseong Kim, and Tajana S. Rosing, "Brain-Inspired Hyperdimensional Computing: An Efficient Classifier for Embedded Devices," ICCAD'17.
163. M. Imani, A. Rahimi, D. Kong, T. Rosing, J. M. Rabaey "Hardware Acceleration of Brain-inspired Hyperdimensional Computing", ICCAD VMC 2017.
164. M. Imani, D. Peroni, Y. Kim, A. Rahimi and T. Rosing, "Efficient Neural Network Acceleration on GPGPU using Content Addressable Memory," DATE'17.
165. M. Samragh, M. Imani, F. Koushanfar and T. Rosing, "LookNN: Neural Network with No Multiplication," DATE'17.
166. M. Imani, S. Gupta, A. Arredondo, T. Rosing "Efficient Query Processing in Crossbar Memory", ISLPED'17.
167. M. Imani, Y. Kim, T. Rosing, "MPIM: Multi-Purpose In-Memory Processing using Configurable Resistive Memory" ASP-DAC'17.
168. M. Imani, D. Kong, A. Rahimi, T. Rosing, "VoiceHD: Hyperdimensional Computing for Efficient Speech Recognition", ICRC'17.

169. M. Imani, Y. Kim, T. Rosing "NNgine: Ultra-Efficient Nearest Neighbor Accelerator Based on In-Memory Computing", ICRC'17.
170. J. Sim, M. Imani, Y. Kim, T. Rosing "Enabling Efficient System Design Using Vertical Nanowire Transistor Current Mode Logic", VLSI-SoC'17.
171. M. Imani, D. Kong, A. Rahimi and T. Rosing, Jan Rabaey, "Brain-Inspired Hyperdimensional Computing: Robust, Scalable and Energy Efficient Classifier," Techcon'17.
172. Y. Kim, M. Imani and T. Rosing, "General-Purpose Online Classification Accelerator via In-Memory Computing," Techon'17.
173. M. Imani, T. Rosing, "CAP: Configurable Resistive Associative Processor for Near-Data Computing," IEEE ISQED'17.
174. M. Imani, D. Peroni, A. Rahimi, T. Rosing, "Non-volatile Content Addressable Memory for Computing Acceleration" NVMW'17.
175. M. Imani, Y. Kim, T. Rosing, "In-Memory Processing to Support Search-Based and Bitwise Computation" NVMW'17.
176. Pietro Mercati, Francesco Paterna, Andrea Bartolini, Mohsen Imani, Luca Benini, Tajana S. Rosing,"VarDroid: Online Variability Emulation in Android/Linux Platforms", GLSVLSI, 2016
177. Akanksha Maurya, Alper Sinan Akyurek, Baris Aksanli and Tajana Rosing, "Time-Series Clustering for Data Analysis in Smart Grid", SmartGridComm, 2016.
178. J. Venkatesh, C. Chan, A. S. Akyurek, B. Aksanli, T. S. Rosing, "A Modular Approach to Context-Aware IoT Applications," IOTDI'16.
179. A. S. Akyurek, T. S. Rosing, "Optimal In-Network Packet Aggregation Policy for Maximum Information Freshness," EUCNC'16.
180. 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**.
181. Yeseong Kim, Pietro Mercati, and Tajana S. Rosing, "Power Efficient, Hierarchical, Introspection Framework for HPC Systems," TECHCON SRC Conference (TECHCON 2016), September 2016
182. M. Imani, D. Peroni, A. Rahimi, T. Rosing, "Resistive CAM Acceleration for Tunable Approximate Computing" ICCD'16. **Best paper nomination, Selected as top ranked conference paper for publishing in IEEE TETC**.
183. M. Imani, Y. Kim, A. Rahimi, T. Rosing, "ACAM: Approximate Computing Based on Adaptive Associative Memory with Online Learning" ISLPED'16.
184. M. Imani, A. Rahimi, Y. Kim, T. Rosing, "A Low-Power Hybrid Magnetic Cache Architecture Exploiting Narrow-Width Values" NVMSA'16.
185. M. Imani, A. Rahimi, T. Rosing, "Resistive Configurable Associative Memory for Approximate Computing" DATE'16.
186. M. Imani, S. Patil, T. Rosing, "MASC: Ultra-Low Energy Multiple-Access Single-Charge TCAM for Approximate Computing" DATE'16.
187. M. Imani, Y. Cheng, T. Rosing, "Processing Acceleration with Resistive Memory-based Computation" MEMSYS'16.
188. M. Imani, P. Mercati, T. Rosing, "ReMAM: Low Energy Resistive Multi-Stage Associative Memory for Energy Efficient Computing" ISQED'16.
189. M. Imani, S. Patil, T. Rosing, "Low Power Data-Aware STT-RAM based Hybrid Cache Architecture" ISQED'16.
190. M. Imani, Y. Kim, A. Rahimi, T. Rosing, "Associative Memory with Online Learning for Approximate Computing" Poster in DAC'16.
191. M. Imani, Y. Cheng, T. Rosing, "Resistive Memory for Approximate Program Acceleration" NVMW'16.
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3. Baris Aksanli, Jagannathan Venkatesh, Inder Monga, and Tajana Rosing, "Reable Energy Prediction for Improved Utilization and Efficiency in Datacenters and Backbone Networks," Computational Sustainability Springer Book Chapter, 2015.
4. 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.
5. 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.
6. 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.
7. 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.
8. 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-Verilag, 2008.

9. 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.
10. 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. TS Rosing, M Imani, Y Kim, B Khaleghi, AN Moshiri, S Gupta, V Kumar, "Methods, circuits, and articles of manufacture for searching within a genomic reference sequence for queried target sequence using hyper-dimensional computing techniques," US20220059189, Priority 2021-02-24.
2. TS Rosing, J Morris, M Imani, Y Kim, J Messerly, Y Guo, B Khaleghi, "Circuits, methods, and articles of manufacture for hyper-dimensional computing systems and related applications," US20220019441A1, Priority 2020-07-14;
3. S Salamat, M Imani, B Khaleghi, T Rosing," Methods and systems configured to specify resources for hyperdimensional computing implemented in programmable devices using a parameterized template for hyperdimensional computing," US20210334703A1, Priority date 2020-02-21.
4. B Khaleghi, TS Rosing, M Imani, S Salamat, "Methods of providing trained hyperdimensional machine learning models having classes with reduced elements and related computing systems," US20210326756A1, Priority 2020-04-07.
5. M Imani, Y Kim, T Rosing, F Koushanfar, MS Riazi, "Systems, circuits and computer program products providing a framework for secured collaborative training using hyper-dimensional vector based data encoding/decoding and related," US20200410404A1, Priority 2019-06-27.
6. A. Acquaviva, B. Luca, T. Rosing, "Application-drive method and apparatus for limiting power consumption in a processor-controlled hardware platform," US 7272730, Priority 2003-07-31.
7. Tajana S Rosing, Ozgur Celebican, "Arrangement and method for estimating and optimizing energy consumption of a system including I/O devices," WO2005076166A1, Priority 2004-01-30
8. 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.
9. V. Deolalikar, T. Simunic: "Method and system for power control in wireless portable devices using wireless channel characteristics",US20050170801A1, Priority date 2004-01-30.
10. 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.
11. T. Simunic, N. Mehta, C. Crome : "Method and Device for Test Vector Analysis"; US6197605B1, Priority date 1996-04-10.

THESES

1. B. Khaleghi, "Hardware-Algorithm Co-design for Efficient and Privacy-Preserved Edge Computing," 2022.
2. U. Mallappa, "AI for Design Optimization and Design for AI Acceleration," 2022.
3. K. Ergun, "Energy-Efficient and Reliability-Driven Management of IoT Systems," 2022.
4. J. Morris, "Fast, Efficient, and Robust Learning with Brain-Inspired Hyperdimensional Computing," 2022.
5. S. Gupta, "Efficient and Secure Learning across Memory Hierarchy," 2021.
6. S. Salamat, "Fast and Energy Efficient Big Data Processing on FPGAs," 2021.
7. M. Imani, "Machine Learning in IoT Systems: From Deep Learning to Hyperdimensional Computing," 2020.
8. Y. Kim, "Efficient Learning in Heterogeneous Internet of Things Ecosystems," 2020.
9. Y. Guo, "Efficient Learning across Multiple Domains with Deep Neural Networks," 2020.
10. J. Sim, "Architecting Non-volatile Memory for High Bandwidth Systems," 2019.
11. D. Peroni, "Approximate Computing for GPGPU Acceleration," PhD, 2019.
12. C. Chan, "Context-aware Platform Design and Optimization," PhD, 2017.
13. A. S. Akyurek, "Optimized Energy Control in Power Distribution Systems," PhD, 2017.
14. P. Mercati, "Power, Thermal, Reliability and Variability Management of Mobile Devices," PhD, 2016.
15. J. Venkatesh, "A Context-aware Approach for Automation of End-User Elements in the Smart Grid," PhD, 2016.
16. J. Yang, "Energy Efficient Data Aggregation in Sensor Networks," PhD, 2015.

17. B. Aksanli, "Energy and Cost Efficient Datacenters," PhD, 2015.
18. R. Strong, "Low-Latency Techniques for Improving System Energy Efficiency," PhD, 2013.
19. V. Kontorinis, "Adaptive Architectures for Peak Power Management," PhD, 2013.
20. S. Sharifi, "Accurate Temperature Sensing and Efficient Dynamic Thermal Management in MPSoCs," PhD, 2011.
21. R. Ayoub, "Temperature and Cooling Management in Computing Systems," PhD, 2011.
22. G. Dhiman, "Dynamic Workload Characterization for Energy Efficient Computing," PhD, 2011.
23. R. Herrmann, "Context based energy management for sensing applications, " MS, 2011.
24. A. K. Coskun, "Efficient Thermal Management for Multiprocessor Systems," PhD 2009.
25. E. Regini, "Resource management in heterogeneous wireless sensor networks," MS 2009.
26. J. Steck, "Energy and task management in energy harvesting wireless sensor networks for structural health monitoring," MS 2009.
27. C. Bergonzini, "Management of solar harvested energy in actuation based embedded systems," MS 2009.
28. D. Lim, "Distributed proxy-layer scheduling in heterogeneous wireless networks," MS 2007.
29. D. Musiani, "Design of an active sensing platform for wireless structural health monitoring," MS 2007.
30. T. Simunic, "Energy efficient system design and utilization," PhD 2001.
31. T. Simunic, "VLSI interconnect design automation using qualitative and quantitative techniques," MS 1993.

ACADEMIC COMMUNITY SERVICE

- Invited to Dagstuhl Seminar on Power and Energy-aware Computing on Heterogeneous Systems, 2022
- Keynote at iTherm, 2022
- Keynote at HPCA-CogArch 2022
- Invited to participate in National AI Research Resource Task Force, August 2021.
- IEEE Fellow Award Committee, 2021.
- DARPA Electronics Resurgence Initiative - Invited speaker & invited demo, 2020, 2021
- NeurIPS reviewer 2021
- Invited talk at Annual Symposium of Academy of Neuroscience & Architecture on Quantified Buildings, Quantified Self, 2021
- Keynote at IGCC, 2021
- Keynote at IEEE Sensors, 2021
- IEEE CEDA Kuh Early Career Award Committee 2018, 2019, 2020
- 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
- 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

- Committee on Committees, 2019-2022.
- JSOE Dean's Faculty Council, 2019-2022.
- Ad-hoc committees for endowed chair appointments, 2014-2022
- Ad-hoc committees within CSE, 2014-2022
- Invited speaker at CS PhD Information Session, 2021
- CSE Diversity Coordinator 2019-2020
- SP-SOC 2018-2019
- LPSOE recruiting committee, 2017-2019
- 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

Tajana Šimunić Rosing

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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 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 graduate 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 course on Internet of Things, 2016.
- Designed and taught courses on Emerging Computing, and SW for Acceleration, 2018.
- Designed and taught an embedded systems class that is a part of Master of Advanced Studies program in Wireless and Embedded Systems at UCSD
- Taught a course on Hardware acceleration for bioinformatics workloads, 2019
- Designed and taught a course on Hypedimensional computing, 2022.

Winter 02 **STANFORD UNIVERSITY** – **lecturer**

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

HONORS & AWARDS

- **SIA-SRC University Researcher Award** 2022, the first woman in history to receive one. This award recognizes lifetime research contributions to the U.S. semiconductor industry.
- **ACM Fellow**, 2022
- **Intel's 2021 Outstanding Researcher Award**, received in 2022
- **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).

Tajana Šimunić Rosing

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- 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

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

1. DARPA & SRC JUMP 2.0 PRISM center, $50.5M, 2023-2028, PI and Center Director; 20 total PIs
2. DARPA & SRC JUMP 2.0 Cognitive computing center, $40M, 2023-2028.Sole PI at UCSD, 20 total PIs
3. DARPA DPRIVE subcontract, $12.3M, 2022-2023
4. NSF MLWiNS, $775k, 2020-2023
5. NSF Lifelong learning with HD Computing, $800k, 2023-2028
6. Qualcomm HDnn gift, $75k, 2021
7. NSF AI TILOS Institute, $20M, 2021-2026
8. NSF Center for Power Management, $375k to UCSD, 2021-2023
9. NSF CCRI: ENS: CHASE-CI, $1.8M, 2021-24
10. NSF CCRI: ABR: Cognitive Hardware and Software Ecosystem Community Infrastructure, $1M, 2021-23
11. NSF Prototype National Research Platform, $6M, 2021-26
12. NSF CC*NPEO REU, $16k, 2021-22
13. NSF REU NRI, $14k, 2021-22
14. NSF FET HD REU, $16k, 2021-22
15. NSF MLWiNS REU, $16k, 2021-22
16. NSF CNS Nautilus , $1.8M, 2021-2024
17. SRC HD, $240k, 2020-2022
18. SRC HDnn, $270k, 2020-2022
19. SRC FHE-PIM, $255k, 2020-2022
20. TSMC HD chip, $300k, 2020-2022
21. NSF RAPID Accelerating COVID-19 Analysis in HW, $200k, 2020-2021
22. NSF REU, $16k, 2020-2021
23. MICS Center funds, $17k,2020
24. Qualcomm gift for HD computing, $150k, 2020 & 2021
25. NSF RAID COVID-19 acceleration, $300k
26. DARPA HyDREA, HD computing, $1M, 2020-2021
27. GRC HD computing $240k, 2019-2022
28. NSF FET HD computing $500k, 2019-2023
29. Russel-Sage Foundation $175k, 2018-2020
30. Kavli Institute for Brain and Mind Innovative, $50k, 2019-2020
31. NSF CC-NPEO, $2.5M, 2018-2021
32. NSF NRI $2.5M, 2018-2020
33. DARPA/SRC JUMP CRISP $40M, 2018-2023
34. KACST IoT, $2.9M, 2017-2019
35. GRC IoT Reliability, $240k, 2018-2021
36. IBM-UCSD AIHL, $16.3M, 2017-2022
37. NSF CPS CHASE-CI, $1M, 2017-2020
38. Samsung IoT, $300k, 2018
39. Huawei, $100k, 2018
40. Intel, $300k, 2016-2018.
41. ARPA-E NODES $2.5M, 2016-2018.

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42. NSF CSR $450k
43. NSF MetaSense $1.126M
44. Qualcomm FMA, Energy management of residences in the grid, $75k, 2014-2015.
45. CEC EISG, Energy management in data centers, $95k, 2013-2014.
46. NSF CSR, Energy efficient data centers, $300k, 2013-2016.
47. FCRP center "TerraSwarm," $27.5M, 2013-2017
48. NSF SCH: EXP SenseHealth, $618k, 2013-2016
49. NSF MRI visualization $2M, 2013-2016
50. Oracle gift, $62k, 2012
51. Google gift, $57k, 2012 CSE
52. NSF MRI optical networking $1.06M, 2012-2014
53. NSF OCI:Sensor-Rocks, $274k, 2012-2014.
54. NSF CCF, $450k, 2012-2015.
55. Futurewei gift, $117k, 2012.
56. Panasonic gift, $100k, 2012.
57. Qualcomm FMA, $75k, 2012-2014.
58. SRC, $150k, 2011-2014.
59. Qualcomm membership, $150k, 2011.
60. Oracle gift, $100k, 2011. CNS
61. Google gift, $75k, 2011. CNS
62. Google, $125k, 2010. CSE
63. Qualcomm gift, $35k, 2010.
64. Microsoft gift, $300k, 2010
65. NSF-ERC CIAN, $14M total, 2010-2019
66. NSF-Expedition on Variability, $4.02M, 2010-2015
67. NSF OCI INRC: TransLight/StarLight, $2.05M, 2010-2014
68. Qualcomm gift, $75k, 2010-2011
69. CNS, $75k, 2010.
70. NSF-CPS, $1.5M, 2009-2013
71. Sun Microsystems Gift, $120k, 2009
72. Google, $50k, 2009.
73. Qualcomm Gift, $15k, 2009
74. NIH PALMS, $3.2M, 2007-2011
75. MARCO-MuSyC center, $3M, 2009-2012
76. NSF CCF ARRA, $476k, 2009-2013
77. NSF GreenLight, $20M, 2008-2012
78. NSF FlashGordon, $22M, 2011-2015
79. Cisco Gift, $80k, 2008-2009
80. MARCO-GSRC Grant, $154k, 2008-2009
81. CNS Grant for thermal management, $142k, 2008-2010
82. CNS Grant for healthcare, $116k, 2008-2010
83. Xilinx gift of 20 XUP DVKs
84. UC Micro Grant, $30k, 2008-2010
85. Sun Microsystems Gift, $100k, 2008-2009
86. NSF-CCF $600k, sensing, 2007-2011
87. Sun Microsystems Gift, $60k, 2007
88. CNS Grant, $130k, 2006-2008
89. NSF – HPWREN, $3M, 2005-2009.
90. LANL Structural Health Monitoring, $7M, 2005-2009.
91. UC Micro, $30k, 2006.
92. Sun Microsystems Gift, $50k, 2005.
93. CNS Grant, $60k, 2005.
94. Intel Grant, $200k, 2005.

95. UC Graduate and Travel Grant $11k, 2005
96. HP Labs - $100k, 2003-2004

RECENT INVITED TALKS

1. SRC Board Invited Speaker, 2022.
2. Keynote at iTherm, 2022
3. Intel Research, OR, "Lifelong learning with HD computing," 2022
4. Invited talk at DATE'22 special session on "Interpretable AI and Nanoelectronics-Based Designs of edge computing systems in the IoT 2.0 Era." Title: "Hyperdimensional computing and applications," 2022
5. Invited talk at ISCA-CogArch on "Accelerating fully homomorphic encryption in memory," 2022
6. Micron Inc. executive leadership committee invited speaker 2022
7. SRC executive committee invited speaker 2022
8. Intel internal workshop, CA, "HD computing and applications," 2021
9. Terradata, CA, "Big data acceleration," 2021
10. Merck, Germany, "Brain-inspired computing using high dimensionality," 2021
11. Raytheon, DC, "Accelerating big data processing in hardware," 2021
12. Xilinx, CA, "Accelerating COVID-19 analysis with FPGAs," 2021
13. Keynote at Annual Symposium of Academy of Neuroscience & Architecture on Quantified Buildings, Quantified Self, (joint with Cognitive Sciences faculty from UCSD) 2021
14. Keynote at IGCC, 2021
15. Keynote at IEEE Sensors, 2021
16. Invited plenary speaker at the Future Chips Forum, Tsinghua University, 2021.
17. Invited to participate in National AI Research Resource Task Force, 2021.
18. DARPA Electronics Resurgence Initiative - Invited speaker & invited demo, 2020, 2021
19. Raytheon, DC, "Accelerating Fully Homomorphic Encryption with Processing in Memory" 2021.
20. Google, CA, "Accelerating big data analysis with in and near memory computing," 2021.
21. Intel Research, OR, "Symbolic reasoning with HD computing," 2021
22. Facebook, CA, "Brain-inspired HD computing," 2021
23. IBM Research, NY, "Acceleration of big data workloads using in memory and in storage computing," 2021
24. Samsung, NV at CES, "Hyperdimensional computing," 2020.
25. MEC/DARPA Invited talk at "Analog Feature Extraction; Rethinking Analog Front-End to Accelerate Digital Inference," Title: "Hyperdimensional computing and its acceleration," 2020.
26. Micron, CA, "Accelerating bioinformatics workloads," 2020.
27. IBM, NY, "Accelerating machine learning & HD computing," 2020.
28. Qualcomm, CA, "Accelerating machine learning & HD computing," 2020.
29. Northrop-Grumman, CA, "Accelerating machine learning & HD computing," 2020.
30. Merck, Germany, "Accelerating workloads using in memory computing," 2020.
31. Merck, Germany, "Acceleration of COVID-19 pipeline," 2020.
32. Intel Research, CA, "Acceleration of COVID-19 pipeline," 2020.
33. Leidos, CA, "HD Computing and its acceleration," 2020.
34. ARM Inc, England, "HD computing," 2020.
35. Intel Research, OR, "Accelerating big data in storage," 2020.
36. EMD, CA, "Accelerating big data in HW," 2020.
37. NXP, CA, "HD computing," 2020.
38. DARPA ERI, DC, invited talk, "Accelerating big data in memory and storage," 2020.
39. LLNL, CA, "Accelerating bioinformatics workloads," 2020
40. Xilinx Inc, CA, "Accelerating bioinformatics workloads on FPGAs," 2020
41. Intel Research, OR, " Computational storage," 2020

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42. UCSD TV, "Research Opportunities and Partnerships in the Tech Industry: Industry Panelists Share insights at the CSE Winter 2020 Research Open House," 2020.
43. VLSI-SOC invited keynote, "Acceleration of big data workloads," 2020.
44. Intel Research, OR, "Hyperdimensional computing," 2020
45. University of Wisconsin, WI, distinguished speaker "Accelerating big data workloads," 2020
46. Invited talk at NSF NDA Panel on AI/ML/Brain-inspired hardware design, 2020
47. Sony, CA, "Accelerating machine learning & HD computing using PIM," 2019.
48. ARM, CA, "Power, performance, thermal & reliability modeling and management in IoT systems," 2019.
49. Intel, OR, "Power, performance, thermal & reliability modeling and management in IoT systems," 2019.
50. EPFL, Switzerland, "Context-aware learning and acceleration," 2019.
51. Yahoo, CA, ""Context-aware learning and acceleration," 2019.
52. Workshop on Brain-Inspired Architectures, NV, "Hyperdimensional Computing & Applications," 2019.
53. Non-volatile Memory Workshop, "Hyperdimensional Computing and Its Applications," 2019.
54. Altera, CA, "Accelerating Bioinformatics Workloads," 2019.
55. IBM Research, CA, "Accelerating machine learning & HD computing using PIM," 2019.
56. Huawei, CA, "Thermal management in mobiles," 2018.
57. Samsung, CA, "Context-aware management in Smart Homes," 2018.
58. IBM Research in Austin, TX, "Context-awareness for healthy aging," 2018.
59. Xconomy, CA, "Big data meets big biology: Accelerating learning for healthy living," 2018.
60. Huawei, China, "Proactive power and thermal management strategies," 2018.
61. Samsung, CA, "Smart Homes: context-aware management," 2018.
62. Intel Research, OR, "Reliability Management for IoT Systems," 2018.
63. DARPA Electronic Resurgence Initiative, CA, "JUMP CRISP Center Overview," 2018.
64. Micron, CA, "Accelerating machine learning workloads using PIM," 2018.
65. JUMP C-BRIC Center, USA, "Accelerating machine learning & HD computing using PIM," 2018.
66. JUMP ADA Center, USA, "Accelerating machine learning & HD computing using PIM," 2018.
67. TSMC, Taiwan, "Accelerating machine learning & HD computing using PIM," 2018.
68. GM, USA, "Context-aware management for IoT systems," 2018.
69. China government delegation, CA, "Context-aware learning and acceleration," 2018.
70. NSF CSR Workshop, WA, "Accelerating learning using PIM," 2018.
71. HLTV Keynote, "Reliability and Maintainability of IoT systems," 2017.
72. IBM, Austin, TX, "Context-aware IoT Systems," 2017.
73. Sony, Japan, "Context-aware IoT Systems" & "UCSD-IBM AI for Healthy Living Center", 2017.
74. D-Link, Japan, "UCSD-IBM AI for Healthy Living Center", 2017.
75. A-Star, Singapore, "UCSD-IBM AI for Healthy Living Center", 2017.
76. NRF, Singapore, "UCSD-IBM AI for Healthy Living Center", 2017.
77. NUS, Singapore, "UCSD-IBM AI for Healthy Living Center", 2017.
78. IBM, Kawasaki, Japan, "Context-aware IoT Systems, their Acceleration & Management," 2017.
79. Sony, Tokyo, Japan, "Context-aware IoT Systems, their Acceleration & Management," 2017.
80. 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.
81. University of Melbourne, Australia, "Context-aware management for Smart Cities," 2016.
82. San Diego Port Authority, CA, "Context-aware management for Smart Cities," 2016.
83. CalTrans, CA, "Context-aware management for Smart Cities," 2016.
84. Cymer, CA, "System Energy Efficiency," 2016.
85. Hitachi, CA, "System Energy Efficiency," 2016.
86. Hewlett-Packard, CA, "System Energy Efficiency for IoT Applications," 2016.
87. IBM, CA, "Context-awareness for healthcare applications," 2016.
88. SDGE, CA, "Sensors to Grid," 2016.