Ayse K. Coskun

Boston University, Electrical and Computer Engineering Department
8 Saint Mary's Street, Boston, MA 02215 USA -- Phone: 617-358-3641 -- E-mail: acoskun@bu.edu
Web: Personal Website, Research Group (PeacLab), Google Scholar

Education

PhD	Computer Science and Engineering, University of California, San Diego	*2009*
MS	Computer Science and Engineering, University of California, San Diego	*2006*
BS	Microelectronics Engineering, Minor Degree in Physics, Sabanci University, Turkey	*2003*

Research Interests

Energy-efficient computing, power and thermal management of computing systems,

Novel computer architectures for emerging technologies (e.g., 3D stacking or on-chip silicon photonics),

Embedded system design,

Cloud and HPC analytics with applied machine learning methods,

Data center resource and energy management, data center sustainability.

Work Experience

Boston University, Boston, MA

Associate Dean of Research & Faculty Development (Interim) at College of Engineering,　　　*July 2023-Present*

- Responsible for supporting the College's research enterprise, including enhancing the extramural research portfolio, and developing faculty mentoring and career progression programs.

Boston University, Boston, MA

Director of the Center for Information & Systems Engineering (CISE)　　　*July 2022-Present*

- Leads the center in catalyzing and enabling interdisciplinary research on intelligent systems, leads the technical activities of CISE, oversees CISE staff and financial planning.

Boston University, Boston, MA

Associate Dean of Educational Initiatives (Interim) at College of Engineering　　　*July 2021-June 2022*

- Responsible for innovative educational programs and projects at undergraduate and graduate levels (e.g., interdisciplinary senior design projects, concentrations, innovations for lab courses).

Boston University, Boston, MA

Full Professor in Electrical and Computer Engineering Department　　　*March 2021-Present*

Associate Professor　　　*May 2015-March 2021*

Assistant Professor　　　*Sept. 2009-May 2015*

- 15 PhD alumni, currently advising 6 PhD students. Hosted and advised 35+ undergraduate researchers and 10+ high school students at the *Performance and Energy Aware Computing Laboratory (PeacLab)*.
- Classes taught: *Introduction to Embedded Systems (EC535)*, *Introduction to Software Engineering (EC327), Advanced Computing Systems & Architecture (EC700/EC713)*.

University of California San Diego, San Diego, CA

Graduate Student Researcher in Computer Science and Engineering Department　　　*2003-2009*

Advisor: Prof. Tajana Simunic Rosing;

PhD thesis: "Efficient Thermal Management for Multiprocessor Systems".

Sun Microsystems, San Diego, CA (now Oracle)
Intern in Systems Dynamics Characterization and Control Team   *2006-2009*
>   Supervisor: Dr. Kenny C. Gross
>   Conducted research on temperature and reliability management methods, monitoring real-time system behavior, and runtime analysis. Co-authored 6 US patents.

Awards and Honors

- HERS (Higher Education Resource Services) Leadership Institute Participant, June 2023.
- R&D 100 Award Finalist for "CoMTE: Counterfactual Explanations for Multivariate Time Series Data", 2022.
- IBM Faculty Award (IBM Global University Program Academic Award), 2020.
- Invited participant at the National Academy of Engineering Frontiers of Engineering Symposium, Sept. 2019.
- Best Artifact Award (given to software artifacts of research papers) at the International European Conference on Parallel and Distributed Computing (EuroPar), 2018.
- Ernest S. Kuh Early Career Award, IEEE Council on Electronic Design Automation (CEDA), 2017. *"For sustained and outstanding contributions to energy-efficient system-level design, including temperature-aware design and management, 3D-stacked system design, and management of large-scale computing systems."*
- Gauss Award (an outstanding paper award) at the International Supercomputing Conference - High Performance (ISC-HPC), 2017.
- First female columnist in the 25-year history of the Circuit Cellar engineering magazine, 2013.
- NSF CAREER Award, "3D Stacked Systems for Energy-Efficient Computing: Innovative Strategies in Modeling and Runtime Management", *2012-2017*.
- Junior Fellow at The Rafik B. Hariri Institute for Computing at Boston University, *2012-2013*.
- Best Paper Award, High Performance Embedded Computing (HPEC) Workshop, *Sept. 2011*.
- A. Richard Newton Graduate Scholarship Award, Design Automation Conference (DAC), "3D Systems for Low-Power High-Performance Computing", *2011-2012*.
- Best Paper Award, IFIP/IEEE International Conf. on Very Large Scale Integration (VLSI-SoC), *Oct. 2009*.

Recent Grants *(Since 2015)*

Grants as Primary Investigator:

- Sandia National Laboratories, "AI-powered Performance Analytics for Heterogeneous HPC Systems", 2024-2027, PI (50%), $495,000. Co-PIs: Manuel Egele and Brian Kulis at BU.
- Red Hat Collaboratory, "AI for Cloud Ops", 2022-2024, PI (50%), $837,000. Co-PIs: Gianluca Stringhini and Alan Liu at BU.
- Sandia National Laboratories, "AI-based Scalable Analytics for Improving Performance, Resilience, and Security of HPC Systems", 2021-2024. PI (50%), $490,000. Co-PIs: Manuel Egele and Brian Kulis at BU.
- Joint Award from the Hariri Institute of Computing and Institute of Sustainable Energy at Boston University, "Exploring Sustainability via Data Center-Grid Integration Across Different Geographies", 2021-2023. PI (50%), $50,000 (gift).
- Diamond Foundry, "Thermal Analysis of High-Performance Chips with Diamond Heat Spreaders", *2021*. PI (100%), $16,647.
- IBM Faculty Award, "Intelligent DevSecOps with AI-driven Data Fusion", *2020*. PI (100%), $20,000 (gift).
- Sandia National Laboratories, "Scalable and Explainable Machine Learning Analytics for Understanding HPC Systems", *2019-2020*. PI (100%), $155,000.
- IBM TJ Watson Research Center, Open Collaborative Research Award, "System Discovery in the Cloud", *2016-2020*. PI (100%), $225,000 (gift).
- Dean's Catalyst Award at College of Engineering, Boston University, "Sustainable IT and IT for Sustainability", *2017-2019*. PI (40%), $80,000 (gift).
- National Science Foundation, CCF SHF, "Reclaiming Dark Silicon via 2.5D Integrated Systems with Silicon Photonic Networks", 2017-2020. PI (40%), $500,000 (BU Budget, Total). Co-PIs: Ajay Joshi and Milos Popovic at BU.

- National Science Foundation, CISE CRI, "CI-New: Collaborative Research: Modeling the Next-Generation Hybrid Cooling Systems for High-Performance Processors", 2017-2020. PI (33%), $233,964 (BU Budget), $696,000 (Total Project Budget). Co-PIs: Sherief Reda at Brown University and Evelyn Wang at MIT.
- Sandia National Labs, U.S. Department of Energy, "Automated Analytics for Improving Efficiency, Safety, and Security of HPC Systems", 2017-2020. PI (50%), $490,000 (BU Budget, Total). Co-PI: Manuel Egele at BU.
- Sandia National Labs, U.S. Department of Energy, "Data Analytics for Improving Efficiency and Security of HPC Systems", *2015-2017*. PI (50%). $189,000 (BU Budget, Total). Co-PI: Manuel Egele at BU.

Grants as Co-PI:
- Research Council of Norway, "Limits to Digitalization (L2D)", 2024-2027, co-PI at BU (50%), $180,000 (BU Budget), $1.1M (Total). BU PI: Benjamin Sovacool. PI: Mads Dahl Djefsen, NTNU.
- National Science Foundation, CCF SHF, "Architecting the COSMOS: A COmbined System of Optical Phase Change Memory and Optical LinkS", 2021-2024, Co-PI (50%), $500,000 (BU Budget Total). PI: Ajay Joshi, BU.
- National Science Foundation, CCF SHF, "Managing Thermal Integrity in Monolithic 3D Integrated Systems", 2019-2022. Co-PI (50%), $250,000 (BU Budget), $500,000 (Total Project Budget). PI: Emre Salman at Stony Brook University.
- National Science Foundation, CISE CSR, "A Just-in-Time, Cross-Layer Instrumentation Framework for Diagnosing Performance Problems in Distributed Applications", 2018-2022. Co-PI (40%), $480,000 (BU Budget, Total). PI: Raja Sambasivan at BU (currently at Tufts) and Co-PI: Orran Krieger at BU.

Selected Recent Academic Service and Memberships

- Editorship:
  - Deputy Editor-in-Chief, IEEE Transactions on Computer Aided Design, 2022-current.
  - Associate Editor, ACM Transactions on Architecture and Code Optimization, 2021-2023.
  - Associate Editor, IEEE Transactions on Computer Aided Design, 2016-2022.
  - Associate Editor, IEEE Transactions on Computers, 2020-2021.
  - Associate Editor, Elsevier Microelectronics Journal, 2017-2018.
- Executive Committee member for IEEE Council on Electronic Design Automation (CEDA), 2014-2020.
  - Design Automation Conference (DAC) CEDA representative: 2017-2020.
- Conference organization:
  - *Special day co-chair* for "Interpretable AI and Nanoelectronics-Based Designs of Edge Computing Systems in the IoT 2.0 Era", Design Automation and Test in Europe (DATE), 2022.
  - *Program chair and local arrangements chair,* ACM/IEEE International Symposium on Low Power Electronics and Design (ISLPED), 2022.
  - *Program chair*, ACM/IEEE Design Automation and Test in Europe (DATE), 2018.
  - *Program vice chair* and Design Track chair, Design Automation and Test in Europe (DATE), 2017.
  - *General chair*, ACM Great Lakes Symposium on VLSI (GLSVLSI), 2016.
  - *Program chair*, ACM Great Lakes Symposium on VLSI (GLSVLSI), 2015.
- Outreach and diversity-inclusion efforts:
  - Founder and organizer of the *Advancing Diversity in Electronic Design Automation (DivEDA) Forum*, held in alternating years at the top EDA conferences Design Automation Conference (DAC) and Design Automation and Test in Europe (DATE), 2018-present.
  - IEEE Council on Electronic Design Automation (CEDA) Liaison to IEEE Women in Engineering, 2012-2016.
  - Hosted 1-2 high school interns yearly as part of the Research Internships in Science and Engineering (RISE) program at BU, 2011-present.
  - Advisor to BU Society of Women Engineers and BU Girls Who Code organizations, 2012-present.
  - Taught regularly at high school programs for increasing interest and diversity in engineering, including at BU Summer Challenge, BU Artemis Project, Upward Bound Math Science, and TechSavvy, 2010-present.

- Technical program committee membership:
  - ACM International Symposium on High-Performance Parallel and Distributed Computing (HPDC) 2020.
  - ACM/IEEE Design Automation Conference (DAC) 2012-2014 and 2018-2020.
  - MICRO-51, 51st Annual IEEE/ACM International Symposium on Microarchitecture, 2018.
  - IEEE Big Data, 2013-2018.
  - IEEE International Conference on Distributed Computing (ICDCS), 2017.
  - IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGrid), 2017.
- IEEE Senior Member.
- ACM Senior Member.
- Columnist for the Circuit Cellar magazine (20,000+ world-wide circulation), writing a bi-monthly column on Green Computing, 2013-2017.

Publications and Patents

Full list available at: https://www.bu.edu/peaclab/publications/

Selected Journal Papers:

16. Burak Aksar, Efe Sencan, Benjamin Schwaller, Omar Aaziz, Vitus J. Leung, Jim Brandt, Brian Kulis, Manuel Egele, and Ayse K. Coskun. **Runtime Performance Anomaly Diagnosis in Production HPC Systems Using Active Learning**, in *IEEE Transactions on Parallel and Distributed Systems (TPDS),* February 2024.

15. Yijia Zhang, Athanasios Tsiligkaridis, Ioannis Ch. Paschalidis, and Ayse K. Coskun. **Data Center and Load Aggregator Coordination Towards Electricity Demand Response**. In *Sustainable Computing: Informatics and Systems,* 2024.

14. Prachi Shukla, Vasilis F. Pavlidis, Emre Salman, and Ayse K. Coskun **TREAD-M3D: Temperature-Aware DNN Accelerators for Monolithic 3D Mobile Systems**. In *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD)*, 2023.

13. Aditya Narayan, Yvain Thonnart, Pascal Vivet, Ayse Coskun and Ajay Joshi. **Architecting Optically-Controlled Phase Change Memory** in *ACM Transactions on Architecture and Code Optimization (TACO)*, vol. 19, issue 4, pp. 1-26, 2022.

12. Anthony Byrne, Emre Ates, Ata Turk, Vladimir Pchelin, Sastry S. Duri, Shripad Nadgowda, Canturk Isci, and Ayse Coskun. **Praxi: Cloud Software Discovery That Learns From Practice** in *IEEE Transactions on Cloud Computing*, vol. 10, no. 2, pp. 872-884, April-June 2022.

11. Zihao Yuan, Prachi Shukla, Sofiane Chetoui, Sean Nemtzow, Sherief Reda, and Ayse K. Coskun. **PACT: An Extensible Parallel Thermal Simulator for Emerging Integration and Cooling Technologies**. In *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD)*, vol. 41, no. 4, pp. 1048-1061, April 2022.

10. Yijia Zhang, Daniel C. Wilson, Ioannis Ch. Paschalidis, and Ayse K. Coskun. **HPC Data Center Participation in Demand Response: an Adaptive Policy with QoS Assurance**. In *IEEE Transactions on Sustainable Computing*, vol. 7, no. 1, pp. 157-171, Jan.-March 2022.

9. Zihao Yuan and Ayse K. Coskun. **Neural Network-based Cooling Design for High-performance Processors** in *iScience*, vol. 25, no. 1, pp. 103-582, Jan. 2022.

8. Aditya Narayan, Yvain Thonnart, Pascal Vivet, and Ayse Coskun. **PROWAVES: Proactive Runtime Wavelength Selection for Energy-efficient Photonic NoCs** in *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD)*, vol. 40, no. 10, pp. 2156-2169, Nov. 2020.

7. Fulya Kaplan, Mostafa Said, Sherief Reda, and Ayse K. Coskun. **LoCool: Fighting Hot Spots Locally for Improving System Energy Efficiency**, in *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD)*, vol. 39, no. 4, pp. 895-908, Feb. 2020.

6. Ayse K. Coskun, Furkan Eris, Ajay Joshi, Andrew B. Kahng, Yenai Ma, Aditya Narayan, and Vaishnav Srinivas. **Cross-Layer Co-Optimization of Network Design and Chiplet Placement in 2.5-D Systems** in *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD)*, vol. 39, no. 12, pp. 5183-5196, Jan. 2020.

5. Onur Sahin, Lothar Thiele, and Ayse K. Coskun. **Maestro: Autonomous QoS Management for Mobile Applications under Thermal Constraints**, In *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems*, vol: 38, no: 8, Aug. 2019.

4. Ozan Tuncer, Emre Ates, Yijia Zhang, Ata Turk, Jim Brandt, Vitus J. Leung, Manuel Egele, and Ayse K. Coskun. **Online Diagnosis of Performance Variation in HPC Systems Using Machine Learning**, in *IEEE Transactions on Parallel and Distributed Systems (TPDS)*, vol. 30, no. 4, pp. 883-896, April 2019.

3. Hao Chen, Yijia Zhang, Michael C. Caramanis, and Ayse K. Coskun. **EnergyQARE: QoS-Aware Data Center Participation in Smart Grid Regulation Service Reserve Provision**, In *ACM Transactions on Modeling and Performance Evaluation of Computing Systems (ToMPECS)*, vol. 4, no. 1, Article 2, January 2019.

2. Can Hankendi and Ayse K. Coskun, **Scale & Cap: Scaling-Aware Resource Management for Consolidated Multi-threaded Applications**. In *ACM Transactions on Design Automation of Electronic Systems,* vol. 22, no. 2, pp. 1-22, January 2017.

1. Can Hankendi, Hank Hoffmann, and Ayse K. Coskun. **Adapt & Cap: Coordinating System and Application-level Adaptation for Power Constrained Systems**. In *IEEE Design & Test*, vol.33, no.1, pp.68-76, Feb. 2016.

Selected Conference Papers (Peer-reviewed):

20. Burak Aksar, Efe Sencan, Benjamin Schwaller, Omar Aaziz, Vitus j. Leung, Jim Brandt, Brian Kulis, Manuel Egele, and Ayse K. Coskun. **Prodigy: Towards Unsupervised Anomaly Detection in Production HPC Systems.** In *International Conference on High Performance Computing, Network, Storage, and Analysis (SC 2023)*, Nov. 2023.

19. Guowei Yang, Cansu Demirkiran, Zeynep Ece Kizilates, Carlos A. Ríos Ocampo, Ayse K. Coskun, and Ajay Joshi. **Processing-in-Memory Using Optically-Addressed Phase Change Memory**. In *ACM/IEEE International Symposium on Low Power Electronics and Design (ISLPED)*, 2023.

18. Prachi Shukla, Derrick Aguren, Tom Burd, Ayse K. Coskun, and John Kalamatianos. **Temperature-Aware Sizing of Multi-Chip Module Accelerators for Multi-DNN Workloads**. In *Design, Automation & Test in Europe Conference (DATE)*, 2023.

17. Burak Aksar, Efe Sencan, Benjamin Schwaller, Omar Aaziz, Vitus J. Leung, Jim Brandt, Brian Kulis, and Ayse K. Coskun. **ALBADross: Active Learning Based Anomaly Diagnosis for Production HPC Systems**. In *IEEE International Conference on Cluster Computing (Cluster)*, July 2022.

16. Anthony Byrne, Yanni Pang, Allen Zou, Shripad Nadgowda, and Ayse K. Coskun. **MicroFaaS: Energy-efficient Serverless on Bare-metal Single-board Computers**. In *IEEE/ACM Design, Automation and Test in Europe Conference (DATE)*, Mar. 2022.

15. Mert Toslali, Emre Ates, Alex Ellis, Zhaoqi Zhang, Darby Huye, Lan Liu, Samantha Puterman, Ayse K. Coskun, and Raja R. Sambasivan. **Automating instrumentation choices for performance problems in distributed applications with VAIF**. In *Proceedings of the ACM Symposium on Cloud Computing*, Nov. 2021.

14. Mert Toslali, Srinivasan Parthasarathy, Fabio Oliveira, Hai Huang, and Ayse K. Coskun. **Iter8: Online Experimentation in the Cloud**. In *Proceedings of the ACM Symposium on Cloud Computing*, Nov. 2021.

13. Burak Aksar, Benjamin Schwaller, Omar Aaziz, Vitus J. Leung, Jim Brandt, Manuel Egele, and Ayse K. Coskun. **E2EWatch: An End-to-end Anomaly Diagnosis Framework for Production HPC Systems**. To appear in *International European Conference on Parallel and Distributed Computing (Euro-Par)*, August 2021.

12. Burak Aksar, Yijia Zhang , Emre Ates, Benjamin Schwaller, Omar Aaziz, Vitus J. Leung, Jim Brandt, Manuel Egele, and Ayse K. Coskun. **Proctor: A Semi-Supervised Performance Anomaly Diagnosis Framework for Production HPC Systems**. To appear in *International Supercomputing Conference (ISC-HPC)*, June 2021.

11. Emre Ates, Burak Aksar, Vitus J. Leung, and Ayse K. Coskun. **Counterfactual Explanations for Multivariate Time Series**. In *Proc. of IEEE International Conference on Applied Artifical Intelligence (ICAPAI)*, May 2021.

10. Daniel C. Wilson, Siddhartha Jana, Aniruddha Marathe, Stephanie Brink, Christopher M. Cantalupo, Diana R. Guttman, Brad Geltz, Lowren H. Lawson, Asma H. Al-rawi, Ali Mohammad, Fuat Keceli, Federico Ardanaz, Jonathan M. Eastep, Ayse K. Coskun. **Introducing Application Awareness Into a Unified Power Management Stack**. In *Proceedings of IEEE International Parallel and Distributed Processing Symposium (IPDPS)*, May 2021.

9. Yijia Zhang, Daniel C. Wilson, Ioannis Ch. Paschalidis, and Ayse K. Coskun. **A Data Center Demand Response Policy for Real-World Workload Scenarios in HPC.** In *Design, Automation and Test in Europe (DATE)*, 2021.

8. Zihao Yuan, Geoffrey Vaartstra, Prachi Shukla, Zhengmao Lu, Evelyn Wang, Sherief Reda, and Ayse K. Coskun. **A Learning-Based Thermal Simulation Framework for Emerging Two-Phase Cooling Technologies.** In *Proceedings of Design, Automation and Test in Europe (DATE)*, pp. 400-405, 2020. *Best Paper Nominee.*

7. Emre Ates, Lily Sturmann, Mert Toslali, Orran Krieger, Richard Megginson, Ayse K. Coskun, Raja R. Sambasivan. **An Automated, Cross-layer Instrumentation Framework for Diagnosing Performance Problems in Distributed Applications.** In *Proceedings of ACM Symposium on Cloud Computing (SoCC)*, Santa Cruz, *pp. 165-170,* Nov. 2019.

6. Emre Ates, Yijia Zhang, Burak Aksar, Jim Brandt, Vitus J. Leung, Manuel Egele, and Ayse K. Coskun. **HPAS: An HPC Performance Anomaly Suite for Reproducing Performance Variations.** In *International Conference on Parallel Processing (ICPP), pp. 1-10,* Aug. 2019.

5. Yijia Zhang, Ioannis Ch. Paschalidis, and Ayse K. Coskun. **Data Center Participation in Demand Response Programs with Quality-of-Service Guarantees.** In *ACM International Conference on Future Energy Systems (e-Energy), pp. 285-302,* June 2019.

4. Emre Ates, Ozan Tuncer, Ata Turk, Vitus J. Leung, Jim Brandt, Manuel Egele and Ayse K. Coskun. **Taxonomist: Application Detection through Rich Monitoring Data**. In *International European Conference on Parallel and Distributed Computing (Euro-Par),* Aug. 2018. *Best Artifact Award*.

3. Ozan Tuncer, Emre Ates, Yijia Zhang, Ata Turk, Jim Brandt, Vitus Leung, Manuel Egele, and Ayse K. Coskun. **Diagnosing Performance Variations in HPC Applications using Machine Learning.** In International Supercomputing Conference, *ISC-HPC 2017*, pp. 355-373, June 2017. *Gauss Award*.

2. Ata Turk, Hao Chen, Anthony Byrne, John Knollmeyer, Sastry S. Duri, Canturk Isci, and Ayse K. Coskun. **DeltaSherlock: Identifying Changes in the Cloud.** In *IEEE International Conference on Big Data*, Washington, DC, pp. 763-772, December 2016.

1. Hao Chen, Bowen Zhang, Michael C. Caramanis, and Ayse K. Coskun. **Data Center Optimal Regulation Service Reserve Provision with Explicit Modeling of Quality of Service Dynamics.** In *Proceedings of IEEE Conference on Decision and Control (CDC)*, pp. 7207-7213, Dec. 2015.

Patents:

6. Kalyan Vaidyanathan, Kenny C. Gross, David Belanger, **Ayse K. Coskun**. **System and Method for Controlling Energy Usage in a Server**. *U.S. Patent 10,101,784*. Issued 10/2018.

5. Ayse K. Coskun, Kenny Gross and Keith Whisnant. **Temperature-Aware and Energy-Aware Scheduling in a Computer System.** *U.S. Patent 8,555,283*. Issued 10/2013.

4. Kenny Gross, Ayse K. Coskun, Keith Whisnant and Aleksey M. Urmanov. **Method and Apparatus for Controlling Temperature Variations in a Computer System.** *U.S. Patent 8,046,112*. Issued 11/2011.

3. Ayse K. Coskun and Kenny Gross. **Managing the Performance of a Computer System.** *U.S. Patent 7,890,298*. Issued 02/2011.

2. Ayse K. Coskun, Aleksey M. Urmanov, Kenny Gross and Keith Whisnant. **Workload Scheduling in Multi-Core Processors.** *U.S. Patent 7,716,006*. Issued 05/2010.

1. Kenny Gross, Keith Whisnant and Ayse K. Coskun. **Length-of-the-Curve Stress Metric for Improved Computer System Reliability Characterization.** *U.S. Patent 7,483,816*. Issued 01/2009.

Selected Recent Invited Talks and Tutorials (Excludes conference paper presentations)

Keynotes:

[1]   "Data Center Demand Response for Sustainability: Myth or Opportunity?", *Keynote* at the IEEE/ACM Design Automation and Test in Europe (DATE) Conference, Sustainable Computing Special Day, Spain, 3.26.2024.

[2]   "AI for Computer System Analytics", *Keynote* at the IEEE International Conference on Application-specific Systems, Architecture, and Processors (ASAP), Portugal, 7.20.2023.

[3]   "AI for HPC Analytics", *Keynote* at HPC Day, University of Massachusetts Lowell, MA, 9.9.2022.

[4]   "Intelligent Analytics for Improving Computer System Design", *Keynote* at ESWEEK, 30th International Workshop on Rapid System Prototyping (RSP), New York, NY, 10.18.2019.

Other Invited Talks:

[5]   "Modeling and Optimizing Chip Cooling via Machine Learning", University of Amsterdam, Netherlands 2.7.2024.

[6]   "ML-Powered Diagnosis of Performance Anomalies in Computer Systems", Accelerated Machine Learning (AccML) Workshop at HiPEAC, 1.17, 2024.

[7]   "Modeling and Optimizing Chip Cooling via Machine Learning", IEEE CASS Rio Grande do Sul Chapter Talks (online/YouTube), 05.26.2023.

[8] "Temperature-Aware Design of 3D-Stacked Accelerators", Workshop on 3D Integration: Heterogeneous 3D Architectures and Sensors at Design Automation and Test in Europe (DATE), Belgium, 04.19.2023.

[9] "AI for Computer System Analytics", Sabanci University, Turkey, 12.19.2022.

[10] "AI for Cloud Ops", Red Hat Research Days (online), 2.16.2022.

[11] "AI for Efficient and Resilient Computing", University of Texas at San Antonio, MATRIX AI Consortium Seminar Series (online), 2.4.2022.

[12] "Intelligent Middleware for Large-Scale Computer Systems to Improve Energy Efficiency", Sabanci University, Turkey (online), 5.21.2021.

[13] "Cross-layer Optimizations for Building Energy-Efficient 2.5D Systems with Silicon Photonic Networks", Georgia Institute of Technology (Gatech), Nano@Tech Lecture Series (online), 9.8.2020.

[14] "Towards Automated Operation of Computing Systems", Brown University, RI, 10.10.2019.

[15] "Towards Automated Operation of Computing Systems", Duke University, NC, 1.11.2019.

[16] "Towards Automated Analytics in the Cloud", IBM TJ Watson Research Center, NY, 8.20.2018.

[17] "Rethinking HPC Performance and the Role of Learning-Based Analytics", HPC Day, Northeastern University, MA, 5.18.2018.

[18] "Rethinking Performance in HPC Systems: Monitoring, Analytics, and Resource Management", 18th SIAM Conference on Parallel Processing for Scientific Computing (Invited Special Session Talk), Japan, 3.7.2018.

[19] "Diagnosing Performance Variations in HPC Applications Using Machine Learning", National Energy Research Scientific Computing Center (NERSC), Lawrence Berkeley National Laboratories, CA, 7.24.2017.

[20] "Improving Performance and Efficiency of Large-Scale Computing Systems through Intelligent Analytics", EPFL, Switzerland, 3.20.2017.

[21] "Monitoring HPC Systems for Improving Efficiency", SIAM Conference on Computational Science and Engineering, Atlanta, GA, 3.1.2017.

[22] "Identifying Changes in the Cloud", EPFL, Switzerland, 2.20.2017.

[23] *"DeltaSherlock*: Identifying Changes in the Cloud", ETH Zurich, Switzerland, 11.16.2016.

[24] "Towards Energy Efficient Computing: Intelligent Management across the Hardware-Software Stack", ETH Zurich, Switzerland, 9.7.2016.

[25] "Identifying Changes in the Cloud", IBM TJ Watson, NY, 8.4.2016.

[26] "Towards Energy Efficient Computing: Intelligent Management across the Hardware-Software Stack", ARM Austin, TX, 6.6.2016.