Special Interest Group on Design Automation
ACM/SIGDA E-NEWSLETTER, Vol. 55, No. 11

SIGDA - The Resource for EDA Professionals

This newsletter is a free service for current SIGDA members and is added automatically with a new SIGDA membership.

Online archive: https://www.sigda.org/publications/newsletter

SIGDA News

1. **SEMICON Japan 2025 to Highlight Advances in AI and Sustainable Chip Design**

SEMICON Japan 2025 is set to make Tokyo Big Sight the epicenter of the global semiconductor industry this December 17–19. The event will feature more than 1,200 exhibitors and a packed agenda of seminars and forums exploring everything from advanced packaging and chiplets to AI, robotics, and photonics.

2. **NVIDIA and Nokia Partner on AI-RAN to Drive 6G Evolution**

NVIDIA and Nokia have announced a major strategic partnership focused on AI-RAN innovation, backed by a $1 billion NVIDIA investment to accelerate AI-powered 5G-Advanced and future 6G networks. The initiative aims to bring intelligence closer to the edge of mobile networks, enabling operators to handle next-generation AI workloads efficiently.

3. **IBM Introduces Spyre AI Accelerator to Market**

IBM has unveiled its new Spyre Accelerator, a custom AI chip designed to boost generative and agentic AI workloads in enterprise systems. The accelerator will become commercially available on October 28 for IBM z17 and LinuxONE 5 systems, with availability for Power11 servers following in December.

4. **SK Hynix Unveils AI-NAND Storage Strategy at OCP Global Summit**

SK hynix has revealed its next-generation AI-NAND storage roadmap aimed squarely at the booming AI inference market. The company presented its new AI-optimized NAND storage lineup, the “AIN (AI-NAND) Family,” during the 2025 OCP Global Summit in San Jose, California, held from October 13 to 16.

5. **Oracle and AMD expand AI supercluster partnership with Instinct GPUs**

Oracle and AMD are expanding their long-running partnership with a next-generation AI supercluster designed to deliver massive scalability and performance for artificial intelligence workloads. Beginning in Q3 2026, Oracle Cloud Infrastructure (OCI) will

Message from the EiC

Dear Readers,

In this edition, we bring you the latest news and activities in our community, upcoming conferences, paper deadlines, an insightful article on What is Quantum Computer Security, and job openings worldwide.

Please do not hesitate to write to us if you want to contribute articles and announcements or share your thoughts and feedback.

Sandeep Chandran,
Editor-in-Chief,
SIGDA e-Newsletter

become the first hyperscaler to publicly offer an AI computing cluster powered by 50,000 AMD Instinct MI450 Series GPUs, with expansion planned into 2027.

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7. **Honeywell Unveils Updated Segment Structure Focused on Automation**

Honeywell has announced a major update to its business segment structure as it moves toward spinning off its Aerospace Technologies and Solstice Advanced Materials units over the next two years. The new structure, taking effect January 1, 2026, will reshape the company's reporting lines and sharpen its focus on automation and digital transformation.

8. **Automation Shift Fuels $15.3B RaaS Market by 2033**

The global Robotics-as-a-Service (RaaS) market is rapidly growing, driven by surging demand for automation across manufacturing, logistics, healthcare, and retail. According to a new report from Verified Market Reports, the sector is expected to grow from $4.5 billion in 2024 to $15.3 billion by 2033.

SIGDA Awards

1. William J. McCalla Best Paper Award @ ICCAD 2025

https://2025.iccad.com/2025-awards

- **Frontend Category**

LaZagna: An Open-Source Framework for Flexible 3D FPGA Architectural Exploration

Ismael Youssef[1], Hang Yang[1], Cong "Callie" Hao[2]

[1] Georgia Tech, United States | [2] Georgia Institute of Technology, United States

- **Backend Category**

Semidefinite Programming-Based Decoupling Capacitor Placement for Power Distribution Network Optimization

Zong-Ying Cai[1], Wei-Han Mao[1], Yao-Wen Chang[1], Yang Lu[2], Jerry Bai[2], Bin-Chyi Tseng[2]

[1] National Taiwan University, Taiwan | [2] ASUSTeK Computer Inc., Taiwan

2. 10 Year Retrospective Most Influential Paper Award @ ICCAD 2025

https://2025.iccad.com/2025-awards

Caffeine: Towards Uniformed Representation and Acceleration for Deep Convolutional Neural Networks

Chen Zhang; Zhenman Fang; Peipei Zhou; Peichen Pan; Jason Cong

SIGDA E-News Editorial Board

3. *2025 Outstanding Service Recognition Award @ ICCAD 2025*
https://2025.iccad.com/2025-awards

Jinjun Xiong
University at Buffalo

4. *Best Reviewer Award @ ICCAD 2025*
https://2025.iccad.com/2025-awards

- ***BaekGyu Kim,*** Daegu Gyeongbuk Institute of Science and Technology, South Korea
- ***Chen Zhang,*** Shanghai Jiao Tong University, China
- ***Fan Chen,*** Indiana University Bloomington, USA
- ***Tathagata Srimani,*** CMU, USA
- ***Yukai Chen,*** IMEC, Belgium

5. *CASES Best Paper Awards @ ESWEEK 2025*
https://esweek.org/awards-2025/

Large or Small: Harnessing the Erase Duality of Emerging Bit-Alterable NAND Flash to Suppress Tail Latency

Guangliang Yao[1], Tsun-Yu Yang[1], Yingjia Wang[1], Tseng-Yi Chen[2], Ming-Chang Yang[1]
[1] The Chinese University of Hong Kong, Hong Kong | [2] National Central University, Taiwan

6. *CODES+ISSS Best Paper Awards @ ESWEEK 2025*
https://esweek.org/awards-2025/

Re-Thinking Memory-Bound Limitations in CGRAs

Xiangfeng Liu[1], Zhe Jiang[2], Anzhen Zhu[1], Xiaomeng Han[2], Mingsong Lyu[3], Qingxu Deng[1], Nan Guan[4]
[1] Northeastern University, China | [2] Southeast University, China | [3] The Hong Kong Polytechnic University, Hong Kong | [4] City University of Hong Kong, Hong Kong

7. *EMSOFT Best Paper Awards @ ESWEEK 2025*
https://esweek.org/awards-2025/

Cumulative-Time Signal Temporal Logic

Hongkai Chen[1], Zeyu Zhang[2], Shouvik Roy[3], Ezio Bartocci[4], Scott Smolka[4], Scott D. Stoller[2], Shan Lin[2]
[1] The Chinese University of Hong Kong | [2] Stony Brook University, USA | [3] Illinois Institute of Technology, USA | [4] TU Vienna, Austria

Paper Deadlines

RTAS'26 - IEEE Real-Time and Embedded Technology and Applications Symposium
Saint Malo, France
Deadline: Nov. 13, 2025
May 12-14, 2026
http://2026.rtas.org

DAC'26 – Design Automation Conference
Long Beach, California, USA
Abstracts due: Nov. 11, 2025
Research Track Deadline: Nov. 18, 2025
Engineering Track Deadline: Jan. 12, 2026
July 26-29, 2026
http://www.dac.com/

HOST'26 – IEEE Int'l Symposium on Hardware-Oriented Security and Trust
Washington DC, USA
Abstracts due: Dec. 1, 2025
Deadline (winter): Dec. 8, 2025
May 4-7, 2026
http://www.hostsymposium.org

MDTS'26 – IEEE Microelectronics Design & Test Symposium
Albany, New York, USA
Deadline: Dec. 15, 2025
May 18-20, 2026
http://natw.ieee.org

FCCM' 26 - IEEE International Symposium On Field-Programmable Custom Computing Machines
Atlanta, Georgia, USA
Abstracts due: Jan. 10, 2026
Deadline: Jan. 17, 2026
May 13-16, 2026
https://www.fccm.org/

8. CASES Test of Time Awards @ ESWEEK 2025

https://esweek.org/awards-2025/

Practical Aggregation of Semantical Program Properties for Machine Learning Based Optimization (CASES 2010)

Mircea Namolaru, Albert Cohen, Grigori Fursin, Ayal Zaks, and Ari Freund

9. CODES+ISSS Test of Time Awards @ ESWEEK 2025

https://esweek.org/awards-2025/

Accurate Online Power Estimation and Automatic Battery Behavior Based Power Model Generation for Smartphones (CODES+ISSS 2010)

Lide Zhang, Birjodh Tiwana, Zhiyun Qian, Zhaoguang Wang, Robert P. Dick, Zhuoqing Morley Mao, and Lei Yang

10. EMSOFT Test of Time Awards @ ESWEEK 2025

https://esweek.org/awards-2025/

RT-Xen: Towards Real-Time Hypervisor Scheduling in Xen (EMSOFT 2011)

Sisu Xi, Justin Wilson, Chenyang Lu, and Christopher D. Gill

11. IEEE CEDA Outstanding Service Award

https://esweek.org/awards-2025/

Alain Girault

INRIA & Univ. Grenoble Alpes, France

12. ACM SIGBED Distinguished Leadership Award

https://esweek.org/awards-2025/

Christopher D. Gill

Washington University in St. Louis, USA

What is Quantum Computer Security?

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Upcoming Conferences

PACT'25 - Int'l Conference on Parallel Architectures and Compilation Techniques
Irvine, California, USA
Nov. 3-6, 2025
http://www.pactconf.org

ICCD'25 – IEEE Int'l Conference on Computer Design
Dallas, Texas, USA
Nov. 10-12, 2025
http://www.iccd-conf.com

FPT'25 - Int'l Conference on Field-Programmable Technology
Shanghai, China
Dec. 2-5, 2025
http://icfpt.org

ISED'25 – Int'l Conference on Intelligent Systems and Embedded Design
Chhattisgarh, India
Dec. 17-19, 2025
http://isedconf.org

iSES'25 – IEEE Int'l Symposium on Smart Electronic Systems
Hyderabad, India
Dec. 17-20, 2025
http://www.ieee-ises.org

HiPC'25 – IEEE Int'l Conference on High Performance Computing, Data, And Analytics
Hyderabad, India
Dec. 17-20, 2025
http://www.hipc.org

VLSID'26 – International Conference on VLSI Design & International Conference on Embedded Systems
Pune, Maharashtra, India
Jan. 3 - 7, 2026
https://vlsid.org/

AE: Alberto Marchisio <alberto.marchisio@nyu.edu>

Quantum computing is rapidly emerging as one of the most transformative technologies of our time. With the potential to tackle problems that remain intractable for even the most powerful classical supercomputers, quantum hardware has advanced at an extraordinary pace [3]. Today, major platforms such as IBM Quantum, Amazon Braket, and Microsoft Azure provide cloud-based access to quantum processors, making them more widely available than ever before. While a promising technology, quantum computing is not magically immune to security threats. Much research has been done on post-quantum cryptography, which addresses how to protect classical computers from attackers using quantum computers. This article, meanwhile, introduces the dual idea of quantum computer security: how to protect quantum computers from security attacks.

Emerging research on the security of quantum computers has already uncovered vulnerabilities across the quantum computing stack: from physical hardware to software compilers to algorithmic implementations. While simultaneously innovative defense mechanisms to address these threats have been suggested. The security threats and current state of the defenses is discussed below.

Hardware-Level Vulnerabilities At the physical layer, researchers have identified quantum crosstalk as a significant attack vector in multi-tenant cloud environments. Foundational characterization studies [1] have enabled precise understanding of qubit coupling mechanisms, paving the way for subsequent work [2, 5, 9] demonstrating how malicious circuits can degrade the fidelity of victim computations sharing the same quantum processor. Beyond crosstalk, side-channel attacks present equally concerning vulnerabilities. Researchers have shown that system behaviors leak sensitive information through multiple channels: timing analysis of reset operations reveals program execution patterns [8], while power consumption traces enable reverse-engineering of gate-level circuits [20]. Perhaps most troubling, recent work [19] revealed that standard reset gates fail to properly clear qubit states, allowing information to leak between consecutively executed circuits, a fundamental flaw in quantum system isolation.

Software-Layer Threats Moving up the stack, quantum compiler security has emerged as another critical concern. Malicious or compromised compilers pose direct threats to intellectual property, with demonstrated capabilities for circuit theft [15]. More sophisticated attacks exploit the compilation process itself: the QTrojan attack [6] demonstrates how adversaries can stealthily disable data encoding by manipulating hardware configuration files while disguising these modifications as routine pulse calibrations.

Building Defense-in-Depth The quantum computer security community is actively developing countermeasures across multiple layers. Hardware-focused defenses include Quantum Trusted Execution Environments [18], Quantum Physical Unclonable Functions (QPUFs) [11, 10], device fingerprinting [14], and circuit watermarking [13]. To protect intellectual property in cloud deployments, researchers have proposed circuit obfuscation techniques [15, 17] that preserve functionality while obscuring implementation details. Software defenses complement these hardware protections. Quantum antivirus systems [7] utilize subgraph isomorphism detection to identify malicious circuit patterns that can induce crosstalk. Circuit splitting approaches [12] distribute computations across multiple quantum processors to limit information exposure to any single provider.

Taxonomizing the Threat Landscape To organize this rapidly evolving field, recent survey work [4] proposes a systematic taxonomy categorizing quantum security threats into three classes: (1) Information Leak attacks that exploit vulnerabilities to

extract sensitive data, (2) Untargeted Attacks that opportunistically degrade system performance without specific objectives, and (3) Targeted Attacks that leverage deep system knowledge to achieve precise malicious goals. Community resources [16] maintain comprehensive bibliographies tracking this literature.

The Path Forward As quantum systems grow in capability and accessibility, security cannot be an afterthought. The research community must continue developing robust defenses that evolve alongside quantum technology itself. Only through sustained attention to security, spanning hardware design, software toolchains, and algorithmic implementations, can we ensure that quantum computing delivers not just computational power, but trustworthy, resilient systems worthy of handling user's most sensitive computations.

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SIGDA Partner Journal

ACM Transactions on Design Automation of Electronic Systems (TODAES) features groundbreaking research and development in the specification, design, analysis, simulation, testing, and evaluation of electronic systems, with a focus on computer science and engineering. The journal's impact factor increased to 2.2 in 2023, more than doubling its value from 2020. Additionally, each issue highlights a notable contribution as the Editor's Pick for special recognition.

TODAES also recognizes papers and outstanding junior researchers through the best paper and rookie of the year awards. Authors can send their paper submissions to the manuscript portal.

TODAES welcomes special issue proposals from leading researchers and practitioners. Such proposals should be emailed to Prabhat Mishra, Senior Associate Editor, at prabhat@ufl.edu

TODAES Special Issue Call for Papers

Special Issue on Co-Design and Design Automation for Optical/Photonic Computing Systems

This special issue seeks original submissions on pioneering research aimed at advancing co-design and EDA methodologies to support the modeling, simulation, design optimization, and physical implementation toward hybrid integration of optical computing/interconnect and electronic systems with high reliability, scalability, and efficiency. All these topics, as well as further potential topics mentioned below, are of interest to this special issue.

Important Dates

- Submissions deadline EXTENDED: Dec 15, 2025
- First-round review decisions EXTENDED: February 15, 2026
- Deadline for revision submissions EXTENDED: March 15, 2026
- Notification of final decisions EXTENDED: April 15, 2026
- Tentative publication EXTENDED: Spring 2026

Submissions should be made through the ACM TODAES submission site (http://mc.manuscriptcentral.com/todaes)

For questions and further information, please contact guest editors at:

- Jiaqi Gu, Arizona State University, jiaqigu@asu.edu
- Cunxi Yu, University of Maryland, cunxiyu@umd.edu
- Sudeep Pasricha, Colorado State University, sudeep@colostate.edu
- Xu Wang, Cadence Design Systems, xubc@cadence.com

More information can be found in this call for papers.

ACM TECS Editor-In-Chief Call for Nominations

The term of the current Editor-in-Chief (EiC) of the ACM Transactions on Embedded Computing Systems (TECS) is coming to an end, and the ACM Publications Board has set up a nominating committee to assist the Board in selecting the next EiC. TECS forms an archival source for publishing high-quality research and developmental results referring to analysis, design, behavior, and experience with embedded computing systems.

The subjects of emphasis are embedded perspectives on: system-level modeling, specification, and synthesis; hardware/software codesign; real-time systems; validation verification; fault tolerance, robustness, reliability and dependability; security and privacy. The scope of TECS also includes emerging technologies, embedded devices and networks for Internet of Things and edge computing, e.g., edge AI and embedded system architectures for TinyML.

Nominations, including self-nominations, are invited for a three-year term as TECS EiC, beginning on April 1, 2026. The EiC appointment may be renewed at most one time. This is a voluntary position, but ACM will provide appropriate administrative support.

Appointed by the ACM Publications Board, Editors-in-Chief (EiCs) of ACM journals are delegated full responsibility for the journal's editorial management consistent with the journal's charter and general ACM policies. The Board relies on EiCs to ensure that the journal's content is of high quality and that the editorial review process is both timely and fair. They have the final say on the acceptance of papers, the Editorial Board size, and Associate Editors' appointment. The ACM Volunteer Editors Position Description contains a complete list of responsibilities. Self-nominations are encouraged and should include a CV and a statement of the candidate's vision for the future development of TECS.

The deadline for submitting nominations is January 15, 2026, although nominations will continue to be accepted until the position is filled. Please send all nominations to the search committee chair. The search committee members are:

- Krishnendu Chakrabarty (Arizona State University), Chair
- Partha Pratim Pande (Washington State University)
- Preeti Ranjan Panda (Indian Institute of Technology, Delhi)
- Wei Zhang (Hong Kong University of Science and Technology)
- Sebastian Steinhorst (Technical University of Munich)

The ACM Publications Board Liaison is: Sartaj Sahni (University of Florida)

Technical Activities

1. **SiPearl Unveils Athena1 Processor for Europe's Dual-Use Needs**
At the recent EPI Forum 2025 in Paris, SiPearl introduced Athena1, named after the Greek goddess of wisdom and war. The processor is designed for government, defense, and aerospace applications, extending the company's first-generation Rhea1—originally developed for high-performance computing (HPC)—into domains where security, data integrity, and operational robustness are essential…

2. **2. Google Open-Sources NPU IP, Synaptics Implements It**
Google Research has open-sourced its Coral NPU IP (previously codenamed Kelvin), which it is giving to the industry in a bid to accelerate edge AI implementations by reducing fragmentation and improving security. Synaptics is the first to implement this NPU in silicon as part of its Astra SL2610 series of IoT device SoCs…

3. **3. AMD in Driver and Occupant Monitoring Systems**
AMD has a long history in the automotive industry and a strong heritage in Driver Monitoring Systems (DMS), which are deeply integrated in L2, L2+, and L3 Vehicles. Driver monitoring is essential to ADAS systems. As vehicles achieve higher levels of autonomy, the more requirements a vehicle's DMS must meet…

Job Positions

University of Nottingham, UK

Job Title: PhD Studentship in Computer Engineering

Description: Caring for individuals living with dementia can be emotionally and physically demanding—especially when carers are unfamiliar with the specific challenges faced by residents. This interdisciplinary PhD project aims to improve the experience of both carers and residents in Nottinghamshire care homes by developing personalised digital avatars that simulate realistic dementia care scenarios. Working closely with carers, families, care home staff, and community organisations, the project will co-design and evaluate these avatars to create immersive training tools. These will help new carers prepare for the specific communication styles, behaviours, and emotional needs they may encounter in each care home. A major focus will be ensuring that the avatars reflect diverse cultural experiences and expressions of dementia, particularly those that are underrepresented in conventional Western training models. For instance, some residents may express distress or confusion in ways shaped by their cultural, linguistic, or religious background. By embedding these nuances in avatar simulations, the project aims to promote inclusive, compassionate, and culturally responsive dementia care. Ultimately, the research seeks to enhance carer confidence, reduce stress, and improve the quality of care for residents living with dementia. For more information, please refer to https://facultyvacancies.com/phd-studentship-in-computer-engineering,i43622.html.

CISPA, Germany

Job Title: Tenure-Track Faculty in Artificial Intelligence and Machine Learning

Description: CISPA is a world-leading research center that focuses on Information Security and Machine Learning at large. To expand and further strengthen our center, we are looking for a Tenure-Track Faculty in Artificial Intelligence and Machine Learning (f/m/d). All applicants are expected to grow a research team that pursues an internationally visible research agenda. To aid you in achieving this, CISPA provides institutional base funding for three full-time researcher positions and a generous budget for expenditures. Upon successful tenure evaluation, you will hold a position that is equivalent to an endowed full professorship at a top research university. We invite applications of candidates with excellent track records in Artificial Intelligence and Machine Learning, especially in (but not limited to) the fields of: Accountability and Authenticity; Causality; Fairness; Federated and Decentralized Learning; Foundations of Statistically Sound (Deep) Learning from Data; Human Factors of AI; Interpretability and Explainability; Neuro-Symbolic Learning; Privacy; Reinforcement Learning; Robustness and Reliability; Sample- and Computationally Efficient Mining and Learning; Secure and Safe AI. For more information, please refer to https://career.cispa.de/jobs/tenure-track-faculty-in-artificial-intelligence-and-machine-learning-f-m-d-2025-2026-73.

University of Doha, Qatar

Job Title: Assistant/Associate Professor Information Technology

Description: The primary role of the faculty members at the College of Computing and IT is to promote high-quality innovative learning, applied research, and service. Besides, he/she should collaborate with the Head of Department, Dean, and the colleagues to achieve the college's mission, mentor junior colleagues, and teaching assistants, and support the department and the college with several administrative and academic services. Reporting to the Department Head, the successful candidate will be responsible for the development, delivery and evaluation of a broad range of courses. Particular areas of interest include Computer Systems, Network Systems and Administration, SDN, Cloud and Edge Computing; but candidates with strong expertise in other related areas will also be considered. Other duties include evaluation of student progress and management of resources of the learning environment. The successful candidate will liaise with industry and other educational institutions; participate in industry advisory committees and coordinate, manage and control projects within the specified program area. Faculty members will keep course portfolio documents required for accreditation processes and engage in instructional development/improvement plans. All employees are expected to contribute to professional and community life within the university and beyond. For more information, please refer to https://facultyvacancies.com/assistantassociate-professor-information-technology,i43109.html.