Special Interest Group on Design Automation
ACM/SIGDA E-NEWSLETTER, Vol. 56, 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/newsletters/

SIGDA News

1. **Marvell Unveils 2nm Optical Interconnects for AI Data Centers**
Marvell Technology is demonstrating what it says are the industry's first 2nm optical interconnect technologies for AI data center infrastructure at ECOC 2026 in Málaga, Spain. The demos cover 400G-per-lane PAM4, 800G ZR/ZR+ pluggables with MACsec, 1.6T ZR and coherent-lite links, alongside a 102.4T co-packaged optics platform.

2. **Siemens and NVIDIA Speed Up AI Chip Lithography by 12x**
Siemens has expanded its collaboration with NVIDIA to accelerate computational lithography for next-generation AI chips, delivering up to 12x faster full-chip optical proximity correction (OPC) workloads. The companies are integrating NVIDIA's cuLitho GPU acceleration library with Siemens' Calibre manufacturing software to tackle one of the biggest bottlenecks in advanced semiconductor manufacturing.

3. **IBM and Siemens Team Up to Advance 3D Nanostack Chip Technology**
IBM and Siemens have announced a research collaboration to advance IBM's 3D nanostack transistor architecture, targeting the design and manufacturing challenges of future angstrom-scale semiconductors. The partnership will combine IBM's semiconductor research with Siemens' electronic design automation (EDA), simulation, and lithography expertise to help move the technology closer to commercial production.

4. **Intel to Acquire Classiq in Full-Stack Quantum Computing Push**
Intel has agreed to acquire Israeli quantum software specialist Classiq in a move to build a full-stack quantum computing platform combining silicon spin-qubit hardware with automated software development tools. The deal, announced on October 26, is expected to close in the first half of 2027, subject to regulatory approvals and customary closing conditions.

5. **AI agents for Embedded Design**
AI agents are all the rage, and the technology is being integrated into embedded development environments to boost productivity. AI can be used for code generation and configuration of platforms, and even for the design of hardware

Message from the EiC

Dear SIGDA members,

In this edition of the newsletter, we present the latest news and activities from our community, forthcoming paper submission deadlines and conferences, an insightful article on "What Is Neuromorphic Computing?", and employment opportunities from institutions worldwide.

We welcome contributions of articles and announcements, as well as your comments and feedback. Please feel free to contact us at any time.

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

in FPGAs, but there are issues with the quality and the safety of code that is produced.

6. SpaceX Targets Weekly Starship Launches in 2027

SpaceX is targeting weekly Starship launches during the first half of 2027, with plans to double that frequency in the second half of the year. CEO Elon Musk outlined the timetable during the company's third-quarter earnings call on 20 October, identifying rapid and complete vehicle reusability as the principal requirement.

7. ASML Hits Record €11.7 Billion Sales as AI Chip Demand Surges

ASML reported record third-quarter 2026 sales of €11.7 billion ($13.6 billion), up 25% from the previous quarter, as growing demand for AI chips continues to drive semiconductor equipment investment. Net income at the Dutch lithography equipment giant reached €5.0 billion, compared with €2.9 billion in the second quarter.

8. Nvidia Commits $250m to UK Agentic AI Safety Research

Nvidia has pledged $250 million in computing resources over five years to accelerate research into agentic AI safety and security across the UK. The initiative will provide $50 million annually in compute access, supporting universities and research organizations developing safeguards for increasingly autonomous AI systems.

SIGDA Awards

1. Best Paper Awards @ CASES in ESWEEK 2026

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

Reliving the Youth: Deterministic TRIM for Capacity-Full Parity-Based SSD RAID Arrays

Tianyu Wang[1], Hang Li[1], Chenlin Ma[1], Jiaxian Chen[2], Kecheng Huang[2], Minhua Lu[1], Rui Mao[1], Yi Wang[1]

[1]Shenzhen University, China | [2]Beijing Inst. of Technology, Zhuhai, China

ThAME: 3D Memory-Enabled Heterogeneous Accelerator for LLM Mixture of Experts

Pratyush Dhingra, Pramit Kumar Pal, Jana Doppa, Partha Pratim Pande

Washington State University, USA

SIGDA E-News Editorial Board

Sandeep Chandran, EiC

Debjit Sinha, past-EiC

Keni Qiu, past-EiC

Xiang Chen, AE for News

Yanzhi Wang,
AE for Local chapter news

Zheyu Yan,
AE for Awards

Alberto Marchisio,
AE for What is

Vojtěch Mrázek,
AE for What is

Rajsaktish Sankaranarayanan,
AE for Researcher spotlight

Xin Zhao,
AE for Paper submission

Ying Wang,
AE for Technical activities

Jiaqi Zhang,
AE for Technical activities

2. Best Paper Award @ EMSOFT in ESWEEK 2026
https://esweek.org/awards-2025/

The zeroLET Task Model and its Application to Offset Design Space Exploration

Shumo Wang[1], Enrico Bini[2], Qingxu Deng[1], Martina Maggio[3]

[1]Northeastern University, USA | [2]University of Turin, Italy | [3]Saarland University, Germany

3. Test of Time Award @ CASES in ESWEEK 2026
https://esweek.org/awards-2025/

SiblingRivalry: Online Autotuning through Local Competitions

Jason Ansel, Maciej Pacula, Yee Lok Wong, Cy Chan, Marek Olszewski, Una-May O'Reilly, Saman Amarasinghe

Massachusetts Institute of Technology, USA

4. Test of Time Award @ CODES in ESWEEK 2026
https://esweek.org/awards-2025/

PRET DRAM Controller: Bank Privatization for Predictability and Temporal Isolation

Jan Reineke[1], Isaac Liu[1], Hiren D. Patel[2], Sungjun Kim[3], Edward A. Lee[1]

[1]University of California, Berkeley, USA | [2]University of Waterloo, Canada | [3]Columbia University, USA

5. Test of Time Award @ EMSOFT in ESWEEK 2026
https://esweek.org/awards-2025/

Computing Semi-Algebraic Invariants for Polynomial Dynamical Systems

Jiang Liu, Naijun Zhan, Hengjun Zhao

State Key Laboratory of Computer Science, Institute of Software, Chinese Academy of Sciences (CAS), China

Paper Deadlines

RTAS'27 - IEEE Real-Time and Embedded Technology and Applications Symposium
Boulder, Colorado, USA
Deadline: Nov. 5, 2026
May 17-20, 2027
http://2027.rtas.org

HOST'27 – IEEE Int'l Symposium on Hardware-Oriented Security and Trust
Washington DC, USA
Abstracts due: Nov. 1, 2025
Winter submission: Nov. 8, 2028
May 3-6, 2027
http://www.hostsymposium.org

DAC'27 – Design Automation Conference
San Jose, CA, USA
Abstracts due: Nov. 11, 2026
Research Paper: Nov. 18, 2026
Engineering Tracks: Jan. 11, 2027
July 11-14, 2027
http://www.dac.com/

MDTS'27 – IEEE Microelectronics Design & Test Symposium
Albany, NY, USA
Abstracts due: Jan. 10, 2027
Deadline: Jan. 17, 2027
May 17-19, 2027
http://mdts.ieee.org

FCCM' 27 - IEEE International Symposium On Field-Programmable Custom Computing Machines
Provo, Utah, USA
Abstracts due: Jan. 10, 2027
Deadline: Jan. 17, 2027
May 9-12, 2027
https://www.fccm.org/

What is Neuromorphic Computing?

Contributing author: Abderaezk Ben Abdallah <benab@u-aizu.ac.jp>
Professor, Regent, Dean, School of Computer Science and Engineering, The University of Aizu, Japan
AE: Alberto Marchisio <chisio@sdu.dk>

As artificial intelligence (AI) applications—particularly those based on deep neural networks—continue to scale in complexity, they face a dual challenge: skyrocketing power consumption and diminishing returns in energy efficiency. Traditional CPU/GPU-based architectures, while versatile, struggle to keep pace with the massive parameter counts and data-transfer requirements of modern models. In this context, Neuromorphic Computing, which encompasses spiking neural networks (SNNs), has emerged as a promising, biologically inspired alternative that leverages event-based processing to drastically reduce energy usage [1], [8]. The philosophy behind this field traces back to the seminal work of Carver Mead in the late 1980s, which established the analogy between biological neural dynamics and subthreshold transistor operation [12].

At its core, neuromorphic computing mimics the mammalian brain's information processing by using parallel arrays of neurons that communicate via discrete spike events rather than continuous signals [8]. Unlike traditional artificial neural networks (ANNs) that process data in continuous propagation cycles, SNN neurons fire only when the membrane potential reaches a specific threshold [8]. This spike-driven mechanism is inherently sparse, both spatially and temporally, enabling simplified, low-power computation [1], [8].

However, even with specialized neuromorphic hardware, memory remains a dominant bottleneck, often accounting for 50%–75% of total power consumption [7]. This is because neural network models require many weight computations, and transferring these weights between memory and processing elements (PEs) incurs significant energy costs [7]. To address this, our recent research focuses on innovative, high-efficiency architectures that break this bottleneck. By leveraging 3D-IC stacking, we can stack memory layers vertically on top of logic layers via Through-Silicon-Vias (TSVs), significantly reducing the data transfer distance between memory and computing segments [1], [7].

Furthermore, approximation-based computing exploits the inherent resilience to noise of SNNs, allowing designers to trade off controlled levels of computational precision for significant energy savings [1]. Because 3D-IC-based neuromorphic systems support multiple power rails via TSVs, my work demonstrates how to implement independent voltage scaling and power-gating for each memory layer [7]. This enables power reduction by scaling down or turning off memory layers containing the least significant bits (LSBs), which are less critical to overall output quality, while keeping the most significant bits (MSBs) accurate [7]. Additionally, we must address the thermal and reliability challenges of 3D integration; techniques such as BTSAM (Balanced Thermal-State-Aware Mapping) enable thermal-aware mapping that balances the workload across the system,

Upcoming Conferences

MICRO'26 – IEEE/ACM Int'l Symposium on Microarchitecture
Athens, Greece
Oct. 31 - Nov. 4, 2026
http://www.microarch.org/micro59

ICCAD'26 – IEEE/ACM Int'l Conference on Computer-Aided Design
San Jose, CA, USA
Nov 8-12, 2026
https://iccad.com/

ICCD'26 – IEEE Int'l Conference on Computer Design
Hong Kong, China
Nov. 16-18, 2026
http://www.iccd-conf.com

FPT'26 - Int'l Conference on Field-Programmable Technology
Honolulu, Hawaii
Dec. 7-10, 2026
http://icfpt.org

iSES'26 – IEEE Int'l Symposium on Smart Electronic Systems
Goa, India
Dec. 15-17, 2026
http://www.ieee-ises.org

VLSID'27 – International Conference on VLSI Design & International Conference on Embedded Systems
Bengaluru, India
Jan 2-6, 2027
https://vlsid.org/

ASP-DAC'27 - Asia and South Pacific Design Automation Conference
Tokyo, Japan
Jan. 25-28, 2027
http://www.aspdac.com

eliminating hotspots and improving system reliability as measured by Mean-Time-To-Failure (MTTF) [3], [5], [11].

As we move toward "More than Moore" computing goals, neuromorphic systems—particularly those utilizing 3D-IC integration and intelligent mapping—offer a robust path forward [4], [8]. These systems provide high integration density, reduced communication latency, and the potential to realize sustainable, high-performance AI at the edge [1], [3], [4], [7], [8].

References:

[1] R. Kobayashi et al., "ApproxiMorph: Energy-efficient Neuromorphic System with Layer-wise Approximation of Spiking Neural Networks and 3D-Stacked SRAM," IEEE Trans. CAD, 2026.
[2] A. Ben Abdallah and K. N. Dang, Neuromorphic Computing Principles and Organization, 2nd Ed., Springer, 2025.
[3] M. Maatar et al., "BTSAM: Balanced Thermal-State-Aware Mapping Algorithms and Architecture for 3D-NoC-Based Neuromorphic Systems," IEEE Access, vol. 12, 2024.
[4] K. N. Dang et al., "HeterGenMap: An Evolutionary Mapping Framework for Heterogeneous NoC-Based Neuromorphic Systems," IEEE Access, vol. 11, 2023.
[5] N. -D. Nguyen et al., "NOMA: A Novel Reliability Improvement Methodology for 3-D IC-based Neuromorphic Systems," IEEE Trans. CPMT, 2025.
[6] N. -D. Nguyen et al., "Power-Aware Neuromorphic Architecture With Partial Voltage Scaling 3-D Stacking Synaptic Memory," IEEE Trans. VLSI Syst., 2023.
[7] A. Ben Abdallah and K. N. Dang, "Toward Robust Cognitive 3D Brain-Inspired Cross-Paradigm System," Front. Neurosci., 2021.
[8] W. Y. Yerima et al., "R-MaS3N: Robust Mapping of Spiking Neural Networks to 3D-NoC-Based Neuromorphic Systems for Enhanced Reliability," IEEE Access, 2023.
[9] O. M. Ikechukwu et al., "On the Design of a Fault-Tolerant Scalable Three-Dimensional NoC-Based Digital Neuromorphic System With On-Chip Learning," IEEE Access, 2021.
[10] K. N. Dang et al., "TSV-OCT: A Scalable Online Multiple-TSV Defects Localization for Real-Time 3-D-IC Systems," IEEE Trans. VLSI Syst., 2020.
[11] The H. Vu, Yuichi Okuyama, Abderazek Ben Abdallah, "Comprehensive Analytic Performance Assessment and K-means based Multicast Routing Algorithms and Architecture for 3D-NoC of Spiking Neurons," ACM Journal on Emerging Technologies in Computing Systems (JETC), Vol. 15, No. 4, Article 34, October 2019. doi: 10.1145/3340963.
[12] C. Mead, "Neuromorphic electronic systems," Proc. IEEE, vol. 78, no. 10, pp. 1629–1636, 1990.

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.

ISSCC'27 – IEEE Int'l Solid-State Circuits Conference
San Francisco, CA, USA
Feb. 14-18, 2027
http://isscc.org

DATE'27 - Design Automation and Test in Europe
Dresden, Germany
March 22-24, 2027
http://www.date-conference.com

ISQED'27 - Int'l Symposium on Quality Electronic Design
San Francisco, CA, USA
Apr. 14-16, 2027
http://www.isqed.or

ISPD'27 – ACM Int'l Symposium on Physical Design
Taiwan
Mar 31- Apr. 2, 2027
http://www.ispd.cc/

ISCAS'27 – IEEE Int'l Symposium on Circuits and Systems
Bordeaux, France
June 6-9, 2027
https://2027.ieee-iscas.org/

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

SIGDA Vision 2030

ACM SIGDA is launching SIGDA Vision 2030, a community-driven initiative to identify key challenges and define strategic priorities for the Design Automation field.

You can contribute by completing a short survey (5-10 minutes): https://bit.ly/SIGDA-Vision-2030-Survey

The input collected will be discussed in upcoming interactive sessions at major conferences (including DATE, DAC, and ICCAD) and will contribute to a strategic report outlining priorities and concrete actions for the coming years. Your input is extremely valuable in shaping the future of the community.

Technical Activities

1. **Cellid Joins Qualcomm Program to Develop Snapdragon-based AR Glasses**

Japan-based Cellid Inc. has joined Qualcomm Technologies' Snapdragon START program to develop augmented reality (AR) glasses reference designs based on Snapdragon platforms. The program, known as the Snapdragon Scalable Turnkey AI-Ready Toolkit, supports the development and commercialization of personal AI devices, including smart glasses. Cellid will use Qualcomm's START Platform solution and software development kits (SDKs) to streamline development and help device manufacturers bring products to market more quickly…

2. **Robbyant Embodied AI Challenge Attracts 1,800 Teams for Real-Robot Trials**

Robbyant's inaugural Embodied AI Challenge attracted more than 1,800 teams from 13 countries before its online qualifying round closed on October 27. The competition's final, scheduled for November 14–16 in Shanghai, will bring participants together for a real-robot hackathon…

3. **Deepx Builds Open Software Ecosystem to Scale Physical AI Beyond the Data Center**

The next competitive battle in edge AI may not be decided by TOPS alone, according to Lokwon Kim, founder and CEO of Deepx, in an interview with EE Times Asia. The more consequential question, he said, is whether AI semiconductor companies can make their technology easy to develop, deploy, and scale…

4. **Cincoze Adds External EMC Protection Modules for Industrial Computers**

Cincoze introduces two external power protection modules to reduce electrical interference in industrial computing systems…

Job Positions

Purdue University, US

Job Title: Faculty Position in Energy and Environment

Description: Purdue University invites applications for multiple tenured/tenure-track Assistant/Associate Professor positions in energy and environment through a cluster search involving the School of Mechanical Engineering (ME), the Elmore Family School of Electrical and Computer Engineering (ECE), and the School of Sustainability Engineering and Environmental Engineering (SEE). Successful candidates must hold a Ph.D. in Mechanical Engineering, Electrical and Computer Engineering, Environmental Engineering, or a closely related discipline by the employment start date. Early-career applicants should show evidence of initiating independent research, while mid-career applicants should demonstrate a sustained record of independent research within academic or industrial organizations and contributions to education and/or mentoring. The successful candidate will conduct original research, advise graduate students, teach undergraduate and graduate courses, and perform service at the School, College, and University levels. Applicants interested in a position in any of Purdue's engineering schools are welcome to apply. The location of this position, including teaching responsibilities, is in Indianapolis. For more information, please refer to https://engineeroxy.com/faculty-position-in-energy-and-environment,i15357.html.

University of Limerick, Ireland

Job Title: Cloud Architect – Governance & Architecture Specialist

Description: The Cloud Architect, Governance & Architecture Specialist is a key member of the Enterprise Architecture team within the University of Limerick's Information Technology Division. The role is responsible for shaping and enabling the secure, compliant and strategic adoption of cloud, AI and enterprise technologies across the University. The post holder will develop practical governance frameworks, architecture patterns and technical controls that support secure, compliant and innovative technology adoption. Working across a diverse university community, the role will provide technical leadership and expert advice on enterprise platforms, helping to ensure technology investments align with institutional objectives, regulatory requirements and best practice. For more information, please refer to https://facultyvacancies.com/cloud-architect-governance-and-architecture-specialist,i47204.html.

Al Ain University, United Arab Emirates

Job Title: PhD Position in Software Engineering

Description: Develop and deliver courses to students in the specified discipline areas of study. Evaluate and monitor individual student progress and provide

feedback to improve and sustain student success. Ability to teach a variety of specialized courses and other courses related to software specialization. Engage in and conduct quality research and publish in journals of high repute. Support and engage in curriculum development and course management aligned with the University and college's standards. Contribute effectively to the college and university initiatives, and participate in constructive proposals and projects. Support and participate in accreditation initiatives at local and international levels. Promote and guide students to envision their future careers in a local, regional, and international context and ensure that they are equipped to meet this challenge. Maintain relationships with students that are conducive to learning. Initiate and participate in effective community engagement activities aiming to benefit the AAU and local community. For more information, please refer to https://facultyvacancies.com/phd-position-in-software-engineering,i47295.html.

Notice to authors

By submitting your article for distribution in this Special Interest Group publication, you hereby grant to ACM the following non-exclusive, perpetual, worldwide rights: to publish in print on condition of acceptance by the editor; to digitize and post your article in the electronic version of this publication; to include the article in the ACM Digital Library and in any Digital Library related services; and to allow users to make a personal copy of the article for noncommercial, educational or research purposes. However, as a contributing author, you retain copyright to your article and ACM will refer requests for republication directly to you.

This ACM/SIGDA E-NEWSLETTER is being sent to all persons on the ACM/SIGDA mailing list. To unsubscribe, send an email to listserv@listserv.acm.org with "signoff sigda-announce" (no quotes) in the body of the message. Please make sure to send your request from the same email as the one by which you are subscribed to the list.

To renew your ACM SIGDA membership, please visit http://www.acm.org/renew or call between the hours of 8:30am to 4:30pm EST at +1-212-626-0500 (Global), or 1-800-342-6626 (US and Canada). For any questions, contact acmhelp@acm.org.