



Special Interest Group on Design Automation **ACM/SIGDA E-NEWSLETTER**, Vol. 54, No. 12

SIGDA - The Resource for EDA Professionals

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SIGDA News

1. [Nvidia Looks to Top \\$120BN in a Bumper 2024](#)

Nvidia is predicting revenues of \$128.5bn in 2024 after a bumper third quarter. This is more than double the \$60.9bn in the previous year and \$26.9bn in 2022. Operating expenses stayed constant at around \$12bn across all three years.

2. [TSMC Drives A16, 3D Process Technology](#)

TSMC is looking to introduce its A16 1.6nm process by the end of 2026 with an IEEE standard for its 3Dblox technology.

3. [BYD Semiconductor Shows Automotive Controller Chips](#)

BYD's chip design spinout has been working with TSMC and Mediatek on a central automotive controller chip and a 4nm smart cockpit chip.

4. [Universal AI RISC-V Processor Does It All – CPU, GPU, DSP, FPGA](#)

Ubitium has secured \$3.7M in seed funding to launch a universal RISC-V processor that eliminates the need for specialized chips. By reimagining IBM's 1967 processing approach, Ubitium will enable advanced AI at no additional cost in embedded systems.

5. [\\$300m for US Chiplet Packaging](#)

Projects in Georgia, California, and Arizona will receive up to \$300m to boost chiplet packaging technology development and substrate manufacturing in the US.

6. [Nvidia Aims for A Digital Twin for Everything](#)

Nvidia has launched a variant of its Omniverse software for real-time physics-based digital twins for a wide range of applications.

Message from the EiC

Dear Readers,

In the December edition, we bring you the latest news and activities in our community, upcoming conferences, paper deadlines, an insightful article on Sustainable Computing, 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

What is

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What is Sustainable Computing?

Amit Kumar Singh

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In the modern era, we are surrounded with many computing systems that are typically realized on electronic devices. They are expected to reach 50 billion in a couple of years and an astonishing 1 trillion within two decades, largely driven by the pursuit of pervasive Artificial Intelligence (AI) applications. This presents an impending threat to the planet's sustainability due to their substantial carbon emissions, e.g. information and communication technology devices are responsible for about 10% of global carbon emissions, and it is expected to increase exponentially.

Additionally, the alarming contribution of over 50 million metric tons of electronic waste (e-waste) annually, averaging 7 kg per capita, underscores the urgency of addressing this burgeoning global waste stream. Carbon emissions by electronics and e-waste will exacerbate further due to exponential increase in the number of devices and thus they are going to significantly impact the sustainability of our planet. Therefore, consideration of sustainability aspects is the need of the hour when designing and operating electronics devices.

Sustainable computing is the way ahead. Therefore, globally, there is particular interest, and it also aligns well with UN's sustainability goals. It is essential that organisations across the globe promote a consistent approach towards achieving sustainability in their infrastructures and systems. Depending upon the types of electronics used and designed by them, they may need to differ in their approaches to contribute to the sustainability, and these considerations will enhance sustainability of the planet while also fulfilling the related government regulations in the future.

There are several directions to achieve sustainable computing. First, environmental sustainability can be enhanced, and several efforts can be made, e.g. using fewer electronic devices [1], reducing their energy consumption [2,3] and extending their longevity [4]. Second, a circular economy can be enabled by product and material recoveries [5,6]. Product recovery can consider repairing, repurposing, refurbishing and remanufacturing of electronics, and material recovery can consider efficient recycling. Third, electronics based on new materials other than semiconductors can be considered or altogether new ways of computations can be thought through so that overall carbon emissions and wastes resulting from computing are reduced.

In summary, although there are ongoing efforts, they consider only one or a few sustainability aspects and progress is slow paced. Therefore, accelerated efforts and joint consideration of all the sustainability aspects are needed while addressing the involved challenges towards the sustainability of our planet.

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References

- [1] Singh, Amit Kumar, Muhammad Shafique, Akash Kumar, and Jörg Henkel. "Resource and throughput aware execution trace analysis for efficient run-time mapping on MPSoCs." *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems* 35, no. 1 (2015): 72-85.
- [2] Isuwa, Samuel, Somdip Dey, Andre P. Ortega, Amit Kumar Singh, Bashir M. Al-Hashimi, and Geoff V. Merrett. "QUAREM: maximising QoE through adaptive resource management in mobile MPSoC platforms." *ACM Transactions on Embedded Computing Systems (TECS)* 21, no. 4 (2022): 1-29.
- [3] Mamun, Sayed Ashraf, Alexander Gilday, Amit Kumar Singh, Amlan Ganguly, Geoff V. Merrett, Xiaohang Wang, and Bashir M. Al-Hashimi. "Intra-and inter-server smart task scheduling for profit and energy optimization of HPC data centers." *Journal of Low Power Electronics and Applications* 10, no. 4 (2020): 32.
- [4] Rathore, Vijeta, Vivek Chaturvedi, Amit K. Singh, Thambipillai Srikanthan, and Muhammad Shafique. "Longevity framework: Leveraging online integrated aging-aware hierarchical mapping and VF-selection for lifetime reliability optimization in manycore processors." *IEEE Transactions on Computers* 70, no. 7 (2020): 1106-1119.
- [5] Pajunen, Nani, and Maria E. Holuszko. "Circular Economy in Electronics and the Future of e-Waste." *Electronic Waste: Recycling and Reprocessing for a Sustainable Future* (2022): 299-314.
- [6] Harris, R. S., Winifred L. Ijomah, and J. F. C. Windmill. "Evaluation and validation of Damage Assessment Tracking Criteria models within the sector of UK automotive remanufacturing." *Journal of Cleaner Production* 414 (2023): 137494.

SIGDA Partner Journal

ACM Transactions on Design Automation of Electronic Systems, TODAES, publishes innovative work documenting significant research and development advances on the specification, design, analysis, simulation, testing, and evaluation of electronic systems, emphasizing a computer science/engineering orientation. Design automation for machine learning/AI and machine learning/AI for design automation are very much welcomed.

If you are an active researcher in the design and design automation field and would like to be part of the TODAES review board, please fill out the following [reviewer form](#). TODAES recognizes those reviewers that provide timely and high-quality reviews through the [Distinguished Review Board](#). TODAES also recognizes papers and outstanding junior researchers through [best paper](#) and [rookie of the year](#) award. Authors can send their paper submissions on the [manuscript portal](#).

TODAES welcomes special issue proposals from leading researchers and practitioners. Such proposals should be emailed to Joerg Henkel, Senior Associate Editor, at joerg.henkel@kit.edu.

Paper Deadlines

HOST'25 – IEEE Int'l Symposium on Hardware-Oriented Security and Trust

San Jose, CA, USA

Deadline: Dec. 16, 2024 (Abstracts due: Dec. 9, 2024)

May 5-8, 2025

<http://www.hostsymposium.org>

MDTS'25 – IEEE Microelectronics Design & Test Symposium

Albany, NY, USA

Deadline: Dec. 15, 2024

May 19-21, 2025

<http://natw.ieee.org>

FCCM' 25 - IEEE International Symposium On Field-Programmable Custom Computing Machines

Fayetteville, AR, USA

Deadline: Jan. 17, 2025 (Abstracts due: Jan. 10, 2025)

May 4-7, 2025

<https://www.fccm.org/>

DAC'25 – Design Automation Conference

San Francisco, CA, USA

Engineering Tracks Deadline: Jan. 16, 2025

June 22-25, 2025

<http://www.dac.com/>

Technical Activities

1. [Electronica 2024: TI's Amichai Ron on Edge AI](#)

Last week, Texas Instruments (TI) introduced two new series of real-time microcontrollers that combine edge AI capability and real-time control intelligent and secure processing in automotive and industrial applications...

2. [Mobile AI Features Evolve: Training LLM Models Directly on Smartphones](#)

MediaTek's Dimensity 9400 chipset enhances smartphones with advanced Edge AI, immersive gaming, and superior imaging, while offering improved energy efficiency and performance for a smarter mobile experience...

3. [Subaru Utilizes Onsemi Image Sensors for Next-Gen AI-Integrated EyeSight System](#)

Onsemi will supply image sensors for Subaru's next-generation EyeSight stereo-camera front sensing system in future vehicle models...

4. [Blueshift Breaks Memory Wall in Data-Intensive Applications](#)

British startup Blueshift Memory's RISC-V memory controller core design addresses the von Neumann bottleneck in data-intensive applications like HPC and AI. Blueshift's alternative to the widely used Harvard architecture, which it calls the Cambridge architecture, can accelerate CPU computation up to 50x and save 65% of the power consumption, depending on the exact nature of the workload...

Job Positions

Purdue University, US

Job Title: Assistant Professor of Computer Science

Description: The Department of Computer Science in the Colleges of Science and Engineering at Purdue University West Lafayette campus solicits applications for Professor of Practice at the Assistant or Associate level to support graduate-level online programs. Professors of Practice participate in departmental, college, and university-level activities and have professional development opportunities. The positions are non-tenure track faculty positions. While the position is with the Department of Computer Science at West Lafayette, fully remote work is possible. Applicants must hold a PhD in computer science or a related field or hold an MS in computer science combined with at least five years industry experience. Applicants must have experience teaching graduate computer science at a United States R1 University, along with experience developing, delivering and managing online courses. Applicants must be able to develop a variety of online graduate courses in Computer Science. Areas of particular interest include courses in Artificial Intelligence, Data Science, Information Security, and Software Engineering. For more information, please refer to <https://facultyvacancies.com/assistant-professor-of-computer-science.i40627.html>

Upcoming Conferences

FPT'24 - Int'l Conference on Field-Programmable Technology
Sydney, Australia
Dec. 10-12, 2024
<http://icfpt.org>

iSES'24 - IEEE Int'l Symposium on Smart Electronic Systems
Ahmedabad, India
Dec. 16-18, 2024
<http://www.ieee-ises.org>

HiPC'24 - IEEE Int'l Conference on High Performance Computing, Data, And Analytics
Bengaluru, India
Dec. 18-21, 2024
<http://www.hipc.org>

ISED'24 - Int'l Conference on Intelligent Systems and Embedded Design
NIT Rourkela, Odisha, India
Dec. 20-22, 2024
<http://isedconf.org>

VLSID'25 - International Conference on VLSI Design & International Conference on Embedded Systems
Bengaluru, India
Jan. 4 - 8, 2025
<https://vlsid.org/>

HiPEAC'25: Int'l Conference on High Performance Embedded Architectures & Compilers
Barcelona, Spain
Jan. 20-22, 2025
<https://www.hipeac.net/2025/barcelona>

ASP-DAC'25 - Asia and South Pacific Design Automation Conference
Tokyo Odaiba Miraikan, Japan
Jan. 20-23, 2025
<http://www.aspdac.com>

ISSCC'25 - IEEE Int'l Solid-State Circuits Conference

Yale University, US

Job Title: Assistant/Associate/Full Professor of Computer Engineering

Description: Prompted by Yale University's recently announced plans for growth in engineering, including a historic series of infrastructure investments to transform the face and trajectory of its School of Engineering and Applied Science (SEAS), the department of Electrical & Computer Engineering is announcing an open rank faculty position at the assistant, associate or full professor level in the field of semiconductor electronic devices. We are looking for outstanding candidates in any area of electronic devices, including logic, memory, and unconventional devices, emerging devices based on novel materials, and microsystems technologies. A successful candidate is expected to be actively engaged in research in semiconductor electronic devices, as well as teaching at the undergraduate and graduate levels. The appointment is anticipated to start July 1, 2025. Candidates must hold a Ph.D. or equivalent degree at the time of hire in Engineering, Mathematics, Computer Science, or related disciplines and must be qualified to teach basic courses in electrical engineering. For more information, please refer to <https://facultyvacancies.com/assistantassociatefull-professor-of-computer-engineering.i40621.html>.

University of Chicago, US

Job Title: Professor of Computer Science

Description: The Department of Computer Science in the Physical Sciences Division at the University of Chicago invites applications for tenured faculty positions at the rank of Professor. This is a broad area search and invites applicants from all subareas of Computer Science and Engineering. Members of the faculty are expected to lead research programs that will produce significant contributions to a field and teach and mentor at the undergraduate and graduate levels. Completion of all requirements for a Ph.D. in Computer Science or a related field is required at the time of appointment. Candidates must have evidence of leadership in their field and successful independent research. For more information, please refer to <https://facultyvacancies.com/professor-of-computer-science.i40633.html>.

San Francisco, CA, USA
Feb. 16-20, 2025
<http://isscc.org>

FPGA'25 – ACM/SIGDA Int'l Symposium on Field-Programmable Gate Arrays

Monterey, CA, USA
Feb. 27- Mar 1, 2025
<http://www.isfpga.org>

ISPD'25 – ACM Int'l Symposium on Physical Design

Austin, Texas, USA
Mar. 16-19, 2025
<http://www.ispd.cc>

DATE'25 - Design Automation and Test in Europe

Lyon, France
Mar. 31 - April. 2, 2025
<http://www.date-conference.com>

ISQED'25 - Int'l Symposium on Quality Electronic Design

San Francisco, CA, USA
Apr. 9-11, 2025
<http://www.isqed.org>

RTAS'25 - IEEE Real-Time and Embedded Technology and Applications Symposium

Irvine, USA, CA
May 6-9, 2025
<http://2025.rtas.org>

MDTS'25 – IEEE Microelectronics Design & Test Symposium

Albany, NY, CA
Tentative Date: May 19-21, 2025
<http://natw.ieee.org>

ISCAS'25 – IEEE Int'l Symposium on Circuits and Systems

London, United Kingdom
May 25-28, 2025
<https://2025.ieee-iscas.org/>

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