



37th IEEE International System-on-Chip Conference



Dresden, Germany

September 16 - 19, 2024

— Call for Papers —



Final Extension

Regular Papers

May 13, 2024

Proposals for Special Sessions, Tutorials and Industrial Talks

May 13, 2024

Notification of acceptance

June 17, 2024

Final camera-ready paper due

July 15, 2024

Highlights

- ◆ Three days technical program
- ◆ One day of Tutorials
- ◆ Industrial talks
- ◆ Industrial and academic exhibition
- ◆ Panel discussion
- ◆ Best Paper / Student Paper Awards
- ◆ Special Sessions, Social Events

Organizing Committee

General Chairs:

Diana Göhringer, TU Dresden, Germany
Uwe Gäbler, Infineon, Germany

Technical Program Chairs:

Tanja Harbaum, KIT, Germany
Klaus Hofmann, TU Darmstadt, Germany

Special Session Chairs:

Magdy Bayoumi, UL Lafayette, USA
Jürgen Becker, KIT, Germany

Tutorial Chairs:

Amlan Ganguly, RIT, USA
Danella Zhao, UA Tucson, USA

Finance Chairs/Treasurers:

Thomas Büchner, IBM, Germany
Ramalingam Sridhar, Univ. at Buffalo, USA

Industrial Chairs:

Klaus Knobloch, Infineon, Germany
Ram Krishnamurthy, Intel, USA
Norbert Schuhmann, FhG IIS, Germany

IEEE CAS Liaison:

Mircea Stan, University of Virginia, USA

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“SoCs & SiPs for the Age of AI”

System-on-Chip (SoC) and System-in-Package (SiP) devices, comprising digital, analog, optical, RF, and Micro-Electro-Mechanical Systems (MEMS) are foundations of ubiquitous embedded high-performance computing (HPC). Such systems will provide solutions in communication, entertainment, medical and smart mobility technologies underpinning emerging “Digital Societies”. Recent advances in systems, packaging and process technologies are enabling the computation of hundreds of teraflops per chip and chiplet system integration unleashing the massive rise of AI-based edge devices, various accelerators, new products and applications. This enormous demand for computing per silicon-based SoC and SiP integration creates new challenges with respect to storage, memory, security, reliability, power, on- and off-chip communication, packaging including reliable design and verification.

For more than 36 years the IEEE International System-on-Chip Conference (SOCC) has been a premier forum for sharing latest advancements in SoC architectures, systems, logic and circuit design, process technology, test, design tools, and application scenarios. We consequently continue this tradition with the 2024 conference at the heart of “Silicon Saxony” in Dresden, Germany.

Areas of Interest

Papers are invited which address new and previously unpublished results in all areas related to SoC and SiP integration, *including but not limited to*:

- * **Devices and Platforms for Edge and accelerated AI/ML computing**
SoCs for AI — Evolvable, adaptable, and reconfigurable architectures — Architectures for intelligent hardware systems — Cloud infrastructure solutions — On-chip learning and adaption — Neuromorphic chips — Low-power and low-area SoCs for smart IoT — Sensing, Imaging and Vision — In-memory computation — In-sensor processing
- * **Emerging and Disruptive Technologies:**
Data processing units (DPUs) — General purpose GPU (GPGPU) computing — Server-on-a-Chip — Cortical processors — Neuronal and neuromorphic computing — Beyond CMOS and sub-nm solutions — Quantum computing — Futuristic development and optimization tools.
- * **Design for Reliable Systems - Safety & Security Integration:**
Hardware-assisted security — Embedded security architectures — Trusted computing architectures — Cyber resilient architectures — Embedded encryption — Quantum-safe cryptography — Homomorphic encryption — SoC solutions for real-time, high reliability and safety applications — Self-healing SoCs — Soft-error and variation-tolerant design
- * **Heterogeneous and Many-Core SoC Architectures:**
On-chip interconnect — Network on Chip (NoC) and multicore architectures — Memory architecture for multicore computing — Heterogeneous and reconfigurable computing — High-performance mobile SoCs — Embedded accelerators — Parallel programming and software models — Multi-die packaging and integration — Chiplets & Dielets
- * **Circuits and Systems:**
RF, analog, mixed-signal — Biomedical — Wireline & Wireless Communication — 5G Circuits and Devices, — Reconfigurable and programmable circuits — MEMS and Sensors — Photonics
- * **Low Power Design:**
“Green” circuits & systems — Low power methodologies — Power/energy/thermal aware architecture design — Multi-domain power/energy management — Energy harvesting
- * **Design Methodologies and Development Flows:**
Heterogeneous design flows — Agile and Feature-Driven HW Development — AI-based HW Development — HW-SW co-design, reconfiguration and debug — System level design methodology and tools — Design validation and verification — Design for Testability, test synthesis, embedded test

Submission of Papers and Special Session Proposals

- * **Regular Papers:**
Limited to six double-column IEEE formatted pages. All submissions will receive double-blind peer review. Accepted papers presented at the conference will be included in the SOCC proceedings and be submitted for inclusion into IEEE Xplore® subject to meeting IEEE Xplore’s quality requirements.
- * **Industrial Talks:**
One up to two pages paper containing problem statement, importance, prior work, technical solution, and benefits, in double-column IEEE format, to be published in the SOCC proceedings.
- * **Special Session and Tutorial Proposals:**
Must include title, topic rationale, organizer’s short bio, and a list of contributed papers. Submit directly to specialsessions@ieee-socc.org or tutorials@ieee-socc.org.

For detailed formatting instructions, submission & publication guidelines, refer to www.ieee-socc.org