AxC23: 8th Workshop on Approximate Computing

June 27th, 2023
Porto, Portugal

Organizers

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CALL FOR PAPERS

Approximate Computing leverages the intrinsic error resilience of applications to inaccuracy in their inner calculations to achieve a required trade-off between efficiency, performance, and power demand and acceptable error of returned results. Approximate results are hard to distinguish from perfect results for audio, image, and video processing, data mining, and information retrieval. In recent years, Approximate Computing applicability has been broadening, and it has been representing a breakthrough in many scientific areas. Suitable solutions come from approximate arithmetic operators, implemented both at the hardware and software level, but from unreliable memory architectures, integrated circuit tests, compilers, etc.

This year's event will be in conjunction with DSN 2023.

The aim of this workshop is the investigation of connections between the approximate computing paradigm and the verification, the test, and the reliability of digital circuits. Special emphasis will be on:

1. How can a cross-layer approximate computing paradigm impact the system's performance?
2. How can open architectures, such as RISC-V, architectures benefit from approximate computing?

The areas of interest include, but are not limited to, the following topics:

- Approximation for Deep Learning applications
- Approximation techniques for emerging processor and memory technologies
- Approximation-induced error modeling and propagation
- Approximation in edge computing applications
- Approximation in HPC and embedded systems
- Approximation in Near-Memory and database processing
- Architectural support for approximation
- Dependability of approximate circuits and systems
- Design automation of approximate architectures

- Design of reconfigurable approximate architectures
- Error resilient Near-Threshold Computing
- Test and fault tolerance of approximate systems
- Hardware/software co-design of approximate systems
- Language, compiler, and operating system support for approximate architectures
- Modeling, specification, and verification of approximate circuits and systems.
- Safety and reliability applications of approximate computing
- Security in the context of approximation
- Software-based fault tolerant technique for approximate computing
- Techniques for monitoring and controlling approximation quality

Contributions: AxC23 accepts **Extended Abstract** and **Short Paper** submissions, up to **4 pages** (+ bibliography).

Publication: The AxC23 short papers will be included in the DSN supplementary proceedings (IEEE Digital Library).

Submission: Papers should be submitted in a standard IEEE format (you can find a template at https://www.ieee.org/conferences_events/conferences/publishing/templates.html).

Further submission guidelines can be found on the workshop's webpage: **https://www.iti.uni-stuttgart.de/en/chairs/ca/axc23/.**

Key dates:

Submission Deadline: **April 11th, 2023**
Notification of acceptance: **April 25st, 2023**

Further information:

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