Journal of Electrical and Computer Engineering

Special Issue on Analog and Mixed-Signal Design Automation

Call for Papers

Design of analog and mixed-signal circuits and systems is a major challenge in today's system-on-chip (SoC). The reason is twofold. First, with the migration of device technology to the nanoscale domain (sub-90nm), device scaling effects, reduced supply voltage, and increasing design density present serious challenges to the designers. Second is the reduced time-to-market window. There is constant pressure on the designers to produce high-performance designs in the first attempt. To cope with the situation, designers need innovative design methodologies and associated design automation tools. Design of analog systems is typically categorized into three levels: high level, circuit level, and layout level. However, each level can be further refined depending on the desired granularity. High-level design of analog systems includes design tasks such as architecture generation, specification translation, performance modeling, and design verification. Circuit-level design takes on topology selection and transistor sizing. Layout-level design involves layout generation and postlayout verification.

The main focus of this special issue will be on the recent advances in methodologies, algorithms, and tools for design automation of analog and mixed-signal systems. Potential topics include, but are not limited to:

- Hierarchical top-down, bottom-up, or integrated design methodology
- Architecture/topology generation or invention
- Specification translation
- Design verification
- Performance modeling
- Automated circuit sizing
- Automated circuit layout
- Computer-aided signal integrity analysis and design
- Statistical analysis and yield-aware or thermal-aware statistical design
- Intellectual property characterization, design reuse, and automated technology migration
- Automated testing

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