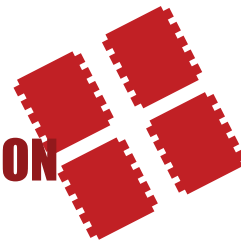


## CENTER FOR SILICON SYSTEM IMPLEMENTATION

[www.ece.cmu.edu/~cssi](http://www.ece.cmu.edu/~cssi)



The Center for Silicon System Implementation (CSSI) at Carnegie Mellon University is composed of 20 participating faculty and approximately 100 graduate students from the Departments of Electrical and Computer Engineering and Computer Science.

The center has strong ties to both national and international semiconductor, design and EDA industrial communities. Founded in 2000, CSSI was formed upon the infrastructure of the Center for Electronic Design Automation that was established in 1982 from a sustaining grant from the Semiconductor Research Corporation (SRC).

The broader focus of CSSI is funded by a combination of contracts and grants from the Microelectronics Advanced Research Corporation (MARCO), the SRC, the Defense Advanced Research Project Agency (DARPA), the National Science Foundation (NSF), the Pittsburgh Digital Greenhouse (PDG), and other forms of industry support.

The unique range of expertise within CSSI spans from system-level architectures and analog/digital system design, to physics and cost modeling of semiconductor manufacturing. More specifically, the research covers the following seven thrust areas:

- **Methodologies** Creation of methods and tools for the design, verification and manufacture of future-generation digital systems.
- **Circuits** In future-generation technologies, the effects of once-insignificant non-idealities will be so prominent that they must be explicitly dealt with through new modeling and analysis, or altogether bypassed through the development of completely new approaches to circuit implementation.
- **Analog** The push for System-on-Chip (SoC) means that analog circuits must be implemented side-by-side with digital circuits using a common fabrication technology. New techniques are therefore required for the design, analysis and implementation of analog and RF circuits that operate robustly in state-of-the-art technologies.
- **Silicon Interface** To fabricate high-yielding, reliable ICs requires an understanding of the fabrication process and the relationship it has to design. Projects are focused on understanding this relationship in future technologies.
- **Micro-Electro-Mechanical Systems Laboratory** Methods and tools for MEMS design, verification and fabrication.
- **Integrated Systems** The push for SoC also means that design partitioning, optimization and tradeoff analysis involves digital, analog, MEMS and software components. Projects in this area focus on the creation of models, methods and tools for performing SoC design.
- **Computing Systems** Implementation of future-generation computing systems will be hampered by their enormous complexity. To overcome the complexity challenge, new architecture approaches are explored along with techniques that formally verify their correctness.

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