



IEEE Council on Electronic Design Automation

First ACM/IEEE A. Richard Newton Technical Impact Award in EDA

Last year, the ACM Special Interest Group on Design Automation (SIGDA) and IEEE CEDA created the ACM/IEEE A. Richard Newton Technical Impact Award in Electronic Design Automation for outstanding technical contributions to honor the late A. Richard Newton, former Dean of Engineering at the University of California, Berkeley. The award acknowledges an individual or individuals for outstanding technical contributions to EDA over a significant period of time. The selection criteria is based on a high-impact, seminal paper published by either the ACM or the IEEE at least 10 years ago.

The first recipients of this award are Robert K. Brayton, Richard Rudell, Alberto Sangiovanni-Vincentelli, and Albert R. Wang for their seminal paper, "MIS: A Multiple-Level Logic Optimization System." The award was presented to these authors during the opening session of the Design Automation Conference on July 28, 2009. Published in *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems* in November 1987, the paper established the groundwork for modern multilevel logic synthesis and has triggered follow-up research over the past 20 years. According to Sharad Malik, professor at Princeton University, "The MIS paper is a fundamental paper in EDA, to be counted in the group with the original Spice, Espresso, and Binary Decision Diagram papers. The ideas presented in this publication have served as the foundation for the field of logic synthesis, in research as well as industrial practice."

This paper has made major contributions to three domains. The first is research. The paper established the basic principles of a script-based multilevel logic synthesis flow and described several algorithmic ingredients to such a flow. The MIS tool implemented these results in an open-source package and was broadly adopted by research groups in academia and industry as a research and benchmarking platform for logic optimization. The second is education. The MIS software has been used for graduate research in logic synthesis. MIS and its follow-up implementations have enabled at least 50 PhD dissertations and many master's theses, leading to a large body of

results over 10 years. Finally, the paper contributed to industry practice, because this software was critical to rapid industry adoption of logic synthesis. It was used internally in companies such as Intel, and adopted by multiple startup companies as the foundation of their products.

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Results of CASS-Sponsored Transactions in 2008 Journal Citations Reports

Thomson Reuters recently published the 2008 *Journal Citations Reports*. An important part of journal evaluation is its impact, as measured by the *impact factor*. The IF is computed as the ratio of a publication's papers cited in a given year to all the papers published in that journal in the preceding two years. All transactions sponsored by the IEEE Circuits and Systems Society (CASS) have experienced a significant improvement of their impact factor:

- 1) **IEEE Transactions on Circuits and Systems for Video Technology.** 2008 IF = 2.951, an increase of 75% over 2007.
- 2) **IEEE Transactions on Circuits and Systems—Part I: Regular Papers.** 2008 IF = 2.043, an increase of 70% over 2007.
- 3) **IEEE Transactions on Circuits and Systems—Part II: Express Briefs.** 2008 IF = 1,436, an increase of 30% over 2007.
- 4) **IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems.** 2008 IF = 1.466, an increase of 88% over 2007.

This is excellent news, and it highlights the tremendous efforts of the EICs and Editorial Boards of these transactions to improve the timeliness of the review process and the technical quality of the published manuscripts. The CASS Publications Committee hopes that this result will help attract even better contributions and that all members will consider CASS-sponsored journals as the most qualified venue to publish the most significant results of their research.

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Memocode Conference and Codesign Contest

The 7th Annual Memocode Conference was held on July 13-15, 2009 in Cambridge, Massachusetts, and included the 3rd Annual Co-Design Contest. Memocode draws its participation from the community of researchers interested in formal techniques applied to system-level design and analysis. This sets it apart from both the embedded-systems design and tools community, which employs largely ad hoc hardware and software tools, and the formal technology community, which focuses mainly on verification problems.

This year's conference included 17 paper presentations, three posters, and invited talks by Amir Pnueli (NYU), David Harel (Weizmann Institute), and Martin Rinard (MIT). Of special interest was a tutorial by Thomas Popp (Graz University of Technology) on embedded-systems security, attacks, and countermeasures. There was also a lively panel discussing the state of hardware description languages (especially in view of the relative maturity of software languages).

CEDA partially sponsored the conference and the contest. Other sponsors included Bluespec; IBM Research; Xilinx; ACM SIGBED and SIGDA, and IEEE CASS. The conference drew 45 attendees, with about 40% coming from abroad. Memocode venues have historically alternated between the US and Europe in successive years, and the 2010 conference will likely be in Europe.

Memocode also featured a session to present the results of the 3rd Annual Co-Design Contest. As in previous years, the contest followed an open format that placed very few restrictions on who could participate and what methodologies and platforms may be used to enter. The entries had to be physically demonstrable and completed within one month. There were prizes for both the highest absolute performance regardless of platform, and the highest performance when normalized by the platform's capability.

The contest has three major goals. First, it aims to foster greater interest in hands-on hardware-software codesign activities in both academic and industrial settings. Second, it provides an open, unbiased forum where academic and industry tool developers can showcase the advantages and issues in their design methodologies or platforms. Third, the design challenge and the wide variety of solutions collected over the years (most of which

are available in open-source forms on the contest Web site) serve as openly available best-effort benchmarks.

Each design submission is evaluated for both absolute and normalized performance. The former is the geometric average speedup over a prescribed set of test inputs relative to a provided reference implementation. The latter is the speedup normalized by the platform's capability, to level the playing field between platforms and to reward a design's efficiency. In addition, a subjective evaluation of design elegance is determined by a panel of judges. This year, the two organizers were joined on the panel by Kees Vissers (Xilinx).

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IEEE ESL Inaugural Issue

The inaugural issue of *IEEE Embedded Systems Letters* is ready, with seven outstanding papers. These have been selected from a group of 37 initial submissions. The papers chosen are as follows:

- "Temperature-Driven Time Synchronization,"
- "Verification of Synchronous Elastic Processors,"
- "ASIP-Based Universal Demapper for Multiwireless Standards,"
- "Portability Versus Efficiency Trade-offs in MAC Implementations for Microsensor Platforms,"
- "BOUNCE: A New High-Resolution Time Interval Measurement Architecture,"
- "Optimizing Bandwidth of Call Traces for Wireless Embedded Systems," and
- "Hardware Resource Virtualization for Dynamically Partially Reconfigurable Systems."

IEEE ESL welcomes your contributions and participation in the journal. Please sign up or submit contributions to <http://mc.manuscriptcentral.com/les-ieee>.

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Upcoming Conferences (Bill Joyner, william.joyner@src.org)	
PATMOS	Delft (Netherlands), Sept. 9-11, 2009
CODES+ISSS	Grenoble (France), Oct. 11-16, 2009
NANO-NET	Switzerland, October 18-20, 2009
ICCAD	San Jose (USA), November 2-5, 2009
FMCAD	Austin (USA), November 2009

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IEEE Embedded Systems Letters is open for submissions. Visit mc.manuscriptcentral.com/les-ieee

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