



## IEEE Council on Electronic Design Automation

### ICCAD 2009

The International Conference on Computer-Aided Design (held this year on 2-5 November in San Jose, California) is the premier conference devoted to technical innovations in design automation. ICCAD's program of technical papers, tutorials, keynotes, and panels highlights the most important current and future research challenges in computer-aided design.

ICCAD also features a day of colocated workshops on hot topics and several side meetings and social events, providing plenty of opportunities for networking with colleagues and friends.

ICCAD 2009 received 438 worldwide submissions, and the technical program committee selected the best 115 papers. In addition, this year's program features several embedded tutorials, as well as two designer sessions. Up-to-date details are available at <http://www.iccad.com>.

Jaijeet Roychowdhury, [jr@eecs.berkeley.edu](mailto:jr@eecs.berkeley.edu)

### IEEE Embedded Systems Letters' Most-Accessed Articles (Sept. 2009)

1. "Optimizing Bandwidth of Call Traces for Wireless Embedded Systems," by R. Shea, M.B. Srivastava, and Y. Cho
2. "Hardware Resource Virtualization for Dynamically Partially Reconfigurable Systems," by C.-H. Huang and P.-A. Hsiung
3. "Temperature Driven Time Synchronization," by T. Schmid, Z. Charbiwala, R. Shea, and M.B. Srivastava
4. "ASIP-Based Universal Demapper for Multiwireless Standards," by A.R. Jafri, A. Baghdadi, and M. Jezequel
5. "Verification of Synchronous Elastic Processors," by S.K. Srinivasan, K. Sarker, and R.S. Katti

For more details, go to <http://ieeexplore.ieee.org/xpl/topAccessedArticles.sp?punumber=4563995>.

### Results of the 2009 Memocode Codesign Contest

The 2009 Memocode Codesign Contest asked participants to implement a system that computed values of an  $N \times N$  grid in polar coordinates by interpolating values from an  $N \times N$  grid in Cartesian coordinates. Grid size varied from 10 to 1,000 points. A reference design by Rachata Ausavarungnirun (Carnegie Mellon University) was released at the start of the contest.

Twenty-two teams from around the world downloaded the contest materials and registered teams. Ultimately, five teams submitted finished, verified solutions by midnight on 31 March 2009. The most successful teams and their results were as follows:

**TeleTitanium:** D.L. Rosenband and T. Rosenband

- Speedup (absolute): 53,064 (1st place)
- Speedup (normalized): NA

**Team MIT:** A. Agarwal, N. Dave, K. Fleming, A. Khan, M. King, M. Ng, and M. Vijayaraghavan

- Speedup (normalized): 3,381 (1st place)
- Speedup (absolute): 3,381 (3rd place)

The standouts this year in the absolute-performance competition were the GPU-based entries, which achieved high performance using CUDA (Compute Unified Device Architecture) programming. However, a well-crafted FPGA-based design won the normalized-performance contest, despite running on the comparatively underpowered XUPV2P platform.

The winning teams received \$1,000 prizes from the contest sponsors.

Philip Jones (Iowa State University) incorporated the contest into his graduate-level design course. A month of the course was dedicated to the competition. He found the experience quite valuable and plans to participate again next year.

Forrest Brewer, [forrest@ece.ucsb.edu](mailto:forrest@ece.ucsb.edu)

## Results of the 2009 CAV Award

The CAV Award is an annual award that recognizes a specific fundamental contribution, or a series of outstanding contributions, to the field of computer-aided verification.

On 29 June 2009, at the 21st International Conference on Computer Aided Verification in Grenoble, France, the 2009 CAV Award was presented to seven individuals for major advances in creating high-performance Boolean satisfiability solvers: Conor F. Madigan (Kateeva Inc.), Sharad Malik (Princeton University), Joao P. Marques-Silva (University College Dublin), Matthew W. Moskewicz (University of California, Berkeley), Karem A. Sakallah (University of Michigan, Ann Arbor), Lintao Zhang (Microsoft Research), and Ying Zhao (Wuxi Capital Group).

The CAV conference steering committee established the CAV Award in 2008, and it was given this year for the second time. This year's award included a \$10,000 prize and was presented with the citation: "For fundamental contributions to the development of high-performance Boolean satisfiability solvers."

The CAV conference is the premier international event for reporting research on computer-aided verification, a subdiscipline of computer science concerned with ensuring that software and hardware systems operate correctly and reliably. It is dedicated to the advancement of the theory and practice of computer-aided formal-analysis methods for hardware and software systems. The conference covers the entire spectrum of CAV, from theoretical results to concrete applications, with an emphasis on practical verification tools and the algorithms and techniques needed for their implementation.

The conference was founded in 1989 by Edmund M. Clarke, Robert P. Kurshan, Amir Pnueli, and Joseph Sifakis. The first CAV conference was hosted in 1989 in Grenoble, France. Since then, it has been held at various sites in North America, Europe, and the Middle East.

Randal E. Bryant, [Randy.Bryant@cs.cmu.edu](mailto:Randy.Bryant@cs.cmu.edu)

*Find us online at [www.c-eda.org](http://www.c-eda.org).*

## IEEE CEDA Phil Kaufman Award

Randal E. Bryant (Dean and University Professor of the School of Computer Science at Carnegie Mellon University) has been selected to receive this year's Phil Kaufman Award for his impact on theory and practice of EDA.

The Electronic Design Automation Consortium and the IEEE Council on Electronic Design Automation selected Randal Bryant for the award because of his seminal technological breakthroughs in the area of formal verification.

Bryant's research has focused on methods for formally verifying digital hardware and some forms of software. Notably, he developed efficient algorithms based on ordered binary decision diagrams (OBDDs) to manipulate the logic functions that form the basis of computer designs. OBDDs form the computational basis for tools that perform hardware verification, logic circuit synthesis, and test generation. Bryant's work revolutionized the field, enabling reasoning about large-scale circuit designs for the first time.

Gradually, Bryant's focus shifted from simulation, which tests a design for a representative set of cases, to formal verification, which ensures that a design operates correctly under all possible conditions. It was in this context that he developed his OBDD-based algorithms. His OBDD data structure provides a way to represent and reason about Boolean functions.

The Phil Kaufman Award, presented annually since 1994, honors individuals who have had a demonstrable impact on the field of EDA. It was established as a tribute to deceased EDA industry pioneer Phil Kaufman, who turned innovative technologies such as silicon compilation and emulation into businesses that have benefited electronic designers. For more information on the award, go to <http://www.edac.org> or <http://www.c-eda.org>.

| Upcoming Conferences (Bill Joyner, <a href="mailto:william.joyner@src.org">william.joyner@src.org</a> ) |                                     |
|---|-------------------------------------|
| ICCAD   | San Jose (USA), 2-5 November 2009   |
| FMCAD   | Austin (USA), 15-18 November 2009   |
| ASP-DAC   | Taipei (Taiwan), 18-21 January 2010 |

IEEE Embedded Systems Letters is open for submissions. Visit [mc.manuscriptcentral.com/les-ieee](http://mc.manuscriptcentral.com/les-ieee)

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