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General Chair's Welcome

Welcome to the 32 nd Design Automation Conference. Again this year, DAC is offering an intense and stimulating week of technical presentations, exhibits, panel sessions and tutorials.

Design automation is a fast paced area where innovation is the key to competitiveness. The interaction of the different communities that contribute to or use design automation (academia, government, DA developers, DA vendors, and electronic system and circuit designers) is essential. The goal of the Design Automation Conference is to facilitate the technical interchange among the people in these various communities and thereby advance the state-of-the-art in design automation and electronic design.

As we enter the information age, the accompanying revolution promises to have as much impact on our lives and our businesses as the Industrial Revolution had in the 19 th century. In the EDA industry, those that can adapt to the new paradigms in electronic design, information generation and distribution, collaboration, intellectual property, business models and software development will be successful. DAC is contributing to this revolution in the EDA industry through the keynote speech, "Living in Interesting Times", a session including a panel on the World Wide Web, electronic distribution of conference information via the World Wide Web, and providing the proceedings on CD-ROM to all attendees. Yes, DAC is moving into the 21 st Century!

The program was developed by a Technical Program Committee under the direction of Ellen Yoffa. Twenty-eight percent of the submitted papers were selected for publication and presentation. Steve Trimberger was responsible for the Designer Track and has assembled an outstanding array of papers and panels about how to use design automation effectively and where the industry is headed. The program reflects the program committee's opinions on the most significant and important contributions. I hope that you share my view that this year's program is exciting and interesting, and that it reflects the rapid progress in our field.

Randy Bryant was responsible for the full-day tutorials. He selected six tutorials of interest to DA developers and electronic designers alike.

There are approximately 125 vendors exhibiting at DAC this year. I invite you to visit these vendors' booths and demo suites. You have an unparalleled opportunity to examine and compare the offerings of EDA vendors who convert ideas, theories and algorithms into products that enhance the productivity of electronic designers.

I want to thank all of the people who have contributed to the success of DAC: the Executive Committee, the Technical Program Committee, the EDA Industry Committee, MP Associates, and especially the exhibitors, authors, speakers and session chairs. Working with these people has been a real pleasure this year.

I hope the 32 nd DAC meets all of your expectations and wish you a rewarding and informative stay in San Francisco.

Bryan Preas
General Chair, 32 nd Design Automation Conference

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1994 SIGDA Meritorious Service Awards

Patrick M. Hefferan

For contributions in support of the SIGDA Newsletter

Charlotte F. Acken

For contributions in support of the Undergraduate Scholarship Program

1995 ACM Fellows

The ACM Fellow Program recognizes and honors outstanding ACM members for their achievements in computer science and information technology and for their significant contributions to the mission of ACM.. Among the ACM Fellows of 1995 are the following who have made contributions to the field of electronic CAD and VLSI systems.

Henry Fuchs - Univ. of North Carolina, Chapel Hill, NC

Franco Preparata - Brown Univ., Providence, R.I.

Lawrence Snyder - Univ. of Washington, Seattle, WA

Jeffrey Ullman - Stanford Univ., Stanford, CA

Chak-Kuen Wong - Chinese Univ. of Hong Kong, Shatin N.T., Hong Kong

1995 IEEE FELLOWS

The grade of Fellow recognizes unusual distinction in the profession and shall be conferred only by invitation of the Board of Directors upon a person of outstanding and extraordinary qualifications and experience in IEEE designated fields, who has made important individual contributions to one or more of these fields.

Charles W. Rosenthal
Engineering Consultants
Portland, OR

1995 Best Paper Award

This year, awards are made for the best papers in four categories. Winners are determined from detailed reviews of the accepted papers in the technical sessions. Each award is accompanied by a plaque and a cash award of $400. The awards are given by ACM/SIGDA (Special Interest Group on Design Automation), IEEE/CAS (Institute of Electrical and Electronics Engineers/Circuits and Systems Society) and EDAC (Electronic Design Automation Companies).

PHYSICAL DESIGN, ELECTRICAL SIMULATION, HIGH SPEED AND ANALOG DESIGN

Paper 13.1:   "Spectral Partitioning: The More Eigenvectors, The Better"
Authors: Charles J. Alpert, So-Zen Yao
Affiliation: Cadence Design Systems, Inc., San Jose, CA

HIGH-LEVEL AND SYSTEM SYNTHESIS

Paper 19.1:   "Delay: An Efficient Tool for Retiming with Realistic Delay Modeling"
Authors: Marios Papaefthymiou, Kumar Lalgudi
Affiliation: Yale Univ., New Haven, CT

LOGIC SYNTHESIS, VERIFICATION AND TEST

Paper 32.1:   "Verification of Arithmetic Circuits with Binary Moment Diagrams"
Authors: Randal E. Bryant, Yirng-An Chen
Affiliation: Carnegie Mellon Univ., Pittsburgh, PA

USE OF CAD AND CAD SYSTEMS

Paper 18.2:   "Behavioral Synthesis Methodology for HDL-Based Specification and Validation"
Authors: David Knapp, Don MacMillen, Tai Ly, Ron Miller
Affiliation: Synopsys, Inc., Mountain View, CA

DESIGN AUTOMATION CONFERENCE SCHOLARSHIP AWARDS

The Design Automation Conference is sponsoring several $12,000 scholarships to support graduate research in Design Automation (DA), with emphasis in "electronic and computer design and test automation". Each scholarship is awarded directly to a university for the Faculty Investigator to expend in direct support of one or more DA graduate students.

The criteria for granting such a scholarship is: the academic credentials of the student(s); quality and applicability of the proposed research; and the impact of the award on the DA program at the institution. Preference will be given to institutions which are trying to establish new DA research programs.

For instructions on submitting a scholarship proposal and details on the conditions of such a grant, please contact: Herschel H. Loomis, Jr., Dept. of ECE, Code EC/Lm, Naval Postgraduate School, Monterey, California 93943-5000; telephone (408) 656-3214; email address on MILNET "loomis@ece.nps.navy.MIL". Proposals are due by 27 March 1996; notification of the awards will be made on 30 April 1996.

1994 Design Automation Conference Scholarship Awards

• Professor Dong S. Ha of Virginia Polytechnic Institute for Gyoochan Sim and Insung Park

• Professors Rafic Makki and Zbigniew Michalewicz of the University of North Carolina at Charlotte for Donald Whisnant

• Professor Majid Sarrafzadeh of Northwestern University for Salil Raje and Amir E. Farrahi

• Professor Martin Wong of the University of Texas at Austin for Honghua Yang, Kai Zhu, and Shassihidhar Thakur

Advancement in Computer Science and Electrical Engineering Undergraduate Scholarships

The objective of the ACSEE Scholarship program is to increase the pool of professionals in Electrical Engineering and Computer Science from under-represented groups (Women, African American, Hispanic, Native American, and Physically Challenged). In 1989, ACM Special Interest Group on Design Automation (SIGDA) began providing the program. Beginning in 1993, the Design Automation Conference provides the funds for the scholarship and SIGDA continues to administer the program for DAC. DAC funds two $4000 scholarships renewable up to 5 years to graduating high school seniors. The former International Daisy User Group funds one $1000 one-time-only scholarship.

The 1995 winners will be announced at the Conference.

This year, the ACSEE scholarship program celebrates the graduation of its first graduates: Mr. Chris Silva from San Jose State University with a degree in Computer Engineering; Ms. Tessa Wilbert from the University of California at Davis with a double major in Computer Science and Electrical Engineering; and Ms. Kim Dinh from the University of Nevada, Las Vegas with a degree in Computer Science Secondary Teaching.

For more information about ACSEE, please contact Dr. Charlotte Acken, Sandia National Laboratories, MS 9405, P.O. Box 969, Livermore, California 94550-0969, email address "cfacken@sandia.gov".

1994 DAC/IDUG ACSEE Undergraduate Scholarships

DAC $4K: Shanti Sleight, Hayward, CA
DAC $4K: Minja Trklja, Santa Barbara, CA
IDUG $1K: Christina Martinez, Newark, NJ

CALL FOR PAPERS

33rd DESIGN AUTOMATION CONFERENCE ®

LAS VEGAS CONVENTION CENTER • JUNE 3 - 7, 1996

DAC is the premier conference devoted solely to the field of Design Automation. All aspects of the use of computers as aids to the design process are welcome, from conceptual design through manufacturing. Four types of submissions are invited: regular papers, special topic sessions, panels, and tutorials.

TOPICS OF INTEREST

Authors are invited to submit original technical papers describing recent and novel research or engineering developments in all areas of design automation. Topics include, but are not limited to:

- 1.1 Electrical Simulation
- 1.2 Discrete Simulation
- 1.3 Timing Analysis and Verification
- 2.1 Testing, Fault Modeling and Simulation, Test Pattern Generation, Test Validation and Design-for-Testability
- 2.2 Design and Implementation Verification
- 3.1 Floorplanning and Placement
- 3.2 Global and Detailed Routing
- 3.3 Physical Module Generation, Symbolic Layout, Compaction, Layout Verification
- 4.1 Technology-Independent, Combinational Logic Synthesis and Optimization
- 4.2 Technology Mapping and the Interaction between Logic Synthesis and Layout
- 4.3 Sequential Synthesis and Optimization
- 4.4 High-Level Synthesis and System-Level Design Aids
- 4.5 Asynchronous Synthesis
- 5.1 Hardware Description Languages
- 5.2 Design Systems and Databases
- 6.1 Computer Aids for IC Fabrication and Manufacturing, Technology CAD
- 7.1 DA for Analog Circuits
- 7.2 High-Speed Systems and Microwave DA
- 7.3 DA for Electronic Packaging
- 8.1 Human Factors in DA
- 8.2 Frameworks and Software Engineering in DA
- 8.3 Hardware/Software Codesign, Concurrent Engineering, Issues in System Design
- 9.1 Complete DA Systems
- 9.2 User Experience with DA Systems
- 9.3 Electronic Design Using DA
- 9.4 Management of DA Systems

DESIGNER TRACK

The Design Automation Conference has expanded its emphasis on the use of DA tools. We are soliciting papers and proposals for panels and tutorials of interest to system and circuit designers, design managers and DA support engineers. Topics can include (but are not limited to) the suggested subjects listed below:

- 9.1 Complete DA Systems
  Tools built on top of frameworks; integrating vendor tools within your system; personal computer DA

- 9.2 User Experience with DA Systems
  Use of automation in the design of state-of-the-art systems; comparative results of using multiple DA systems

- 9.3 Electronic Design Using DA
  Design methodology and design process; silicon strategies: FPGA, PLD, ASIC; design reuse

- 9.4 Management of DA Systems
  Partnering with DA vendors; standards issues: VHDL/EDIF/CFI; component libraries; quality

REQUIREMENTS FOR SUBMISSION OF PAPERS

Authors should submit their papers to the Program Chair postmarked no later than October 6, 1995. **Previously published papers, including workshop proceedings, will not be considered.** Each submission should include one cover page and ten (10) stapled copies of the complete manuscript.

The one cover page should include:

- Name, affiliation, and complete address for each author
- A designated contact person including his/her telephone number, fax number, and email address
- A designated presenter, should the paper be accepted
- A list of topic numbers, **ordered by relevancy**, most clearly matching the content of the paper.
- The following signed statement: "All appropriate organizational approvals for the publication of this paper have been obtained. If accepted, the author(s) will prepare the final manuscript in time for inclusion in the Conference proceedings and will present the paper at the Conference."

To permit a blind review, do not include name(s) or affiliation(s) of the author(s) on the manuscript. Include:

- Title of paper
- 60-word abstract indicating significance of contribution. The abstracts of accepted papers will appear on the World Wide Web before the Conference.
- The complete text of the paper in English, including all illustrations and references, not exceeding 5000 words. The papers will be reviewed as finished papers. Preliminary submissions will be at a disadvantage.

Notice of acceptance will be mailed to the contact person by February 16, 1996. Authors of accepted papers must sign a copyright release form.

PANELS, TUTORIALS, SPECIAL TOPIC SESSIONS

Proposals for Panels, Tutorial Sessions, and Full-Day Tutorials should be submitted to the Program Chair no later than October 6, 1995. Proposals should not exceed two pages in length and should describe the topic and intended audience. They must include a list of all participants, including the moderator for Panels. **For proposal instructions, send a one-line email message to proposals@dac.com.**

Special Topic Sessions may be either independent papers with a common theme or a set of closely related papers describing an overall system. In both cases, independent reviews of each paper and evaluation of the session as a whole will be used to select sessions. Proposals for Special Topic Sessions should be submitted along with the list of papers to be included in the session and should describe the session's theme. These proposals and paper submissions must be postmarked no later than October 6, 1995.

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REVIEWERS

A total of 413 manuscripts were submitted to the 1995 DAC. The Conference Executive and Program Committees wish to acknowledge the time and effort spent by the following people who reviewed these manuscripts and returned the review forms completed. Our thanks to all of those who participated and contributed to the success of the Conference.

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1995 KEYNOTE ADDRESS

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Living in Interesting Times

Over the past quarter century, the field of design technology for electronic systems has bumped its way along through a number of major transitions—from mostly bipolar to mostly CMOS design, from SSI to ULSI, from "mils" to "sub-micron", from "Please don't try to automate that!", to "Please! Automate that", from mainframe, batch-oriented, stand-alone environments to interactive "personal minicomputers" and the personal computers of today.

Each of these transitions has brought with it both opportunity and danger—even extinction—for those of us in both industry and academia trying to predict or follow the many twists and turns. Somehow, the field of design automation seems to shudder along, taking two steps forward for every one step backward. Groups which have successfully predicted the change and have led the transition have prospered, groups which have organized themselves to adapt have survived and have occasionally even made it back to a leadership role, and the rest have simply disappeared.

As a discipline and as an industry, we are poised on the brink of another major transition, a transition triggered by the communications revolution occurring about us, but a transition driven by many other factors as well. Five years from now our industry will do its business in a radically different way as the relationships which exist today among users of design technology, design technology developers, component suppliers, and manufacturers of integrated electronic circuits and systems will have broken and been re-forged into a very different shape. The overall architectures of our design systems will have changed as radically as the transition from batch to interactive systems and we will be beginning to apply a new class of user input-output devices to our design problems.

No matter how these events unfold, in a world of ever-increasing complexity, a world where every human being is becoming increasingly dependent on electronic systems, and a world where the increasing rate of change in the marketplace continues to drive the electronics industry, it is clear that the role of design, and so the role of design technology, will become increasingly important, broadening our markets and our opportunities. No matter what, the times are bound to remain interesting!