Welcome Message

Welcome to the 34th edition of the IEEE International Conference on Computer Design (ICCD) in Phoenix, AZ. ICCD encompasses a wide range of topics in the research, design, and implementation of computer systems and their components. Over the past 34 years, ICCD has been a forum where researchers from many disciplines within Electrical Engineering and Computer Science have met and discussed novel approaches to the design of entire computer systems.

ICCD 2016 received 276 regular papers in five core areas, namely, Computer Systems and Applications (CSA), Electronic Design Automation (EDA), Processor Architecture (PA), Logic and Circuit Design (LCD), and Test, Verification, and Security (TVS). An international program committee of 155 members diligently went through each submission and selected an outstanding list of papers for our program. ICCD 2016 program includes 77 oral presentations (28% acceptance rate), and 26 poster presentations. In addition, three special sessions on emerging and high interest topics and three tutorials complement the technical program.

ICCD 2016 presents three excellent keynote speakers. Ken Hansen, the CEO of Semiconductor Research Corporation will deliver the opening keynote. Keith Marzullo, the Dean of the College of Information Studies at the University of Maryland will deliver the Tuesday morning keynote, and Sankar Basu, CCF Program Director from US National Science Foundation will deliver the final keynote.

ICCD also features the social program, An Evening at the Desert Botanical Garden where attendees will be taken to the world famous Desert Botanical Garden for the dinner reception.

Sincerely,

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Keynote Talks

Monday

A Research Agenda to Drive the Semiconductor Industry – SRC Taking the Lead
By Ken Hansen, CEO, Semiconductor Research Corporation

Abstract
The semiconductor industry compounded annual growth rate has dropped to 2.2% over the last five years. At the same time the phenomenon known as Moore’s Law that has been driven by dimensional scaling has also slowed. There is a need for transformative innovation to provide new silicon and software content to reinvigorate the growth in the industry. There are many market opportunities identified such as the Internet of Things where many have projected 50 billion connected devices by 2020, the continued electrification of the vehicle particularly in the ADAS and infotainment space with a goal to create an autonomous vehicle, the eHealth market for personalized, real-time diagnosis and treatment and the unbounded need for computational power to solve problems that we cannot even begin to attack today because of limited bandwidth. SRC in conjunction with SIA and NSF last year produced a report named “Rebooting the IT Revolution” which lays out a research agenda to begin the path towards the transformative innovation required to meet these market needs. This presentation will identify industry technical challenges, introduce the proposal for a combined public-private research agenda to remove the roadblocks that lie ahead, highlight some current SRC funded research supporting this initiative and identify SRC’s efforts to take the lead.

Biography

Ken Hansen joined Semiconductor Research Corporation as its President and CEO in June 2015. Ken brings his experience as the former Vice President and Chief Technology Officer with Freescale Semiconductor. Prior to becoming CTO at Freescale, Ken was Vice President and led Freescale’s Chief Development Office where he improved design efficiency and reduced product cost for all Freescale business units. Previously, he held several senior technology and management positions at Freescale and Motorola leading research and development teams. He received the BSEE and MSEE degrees from the University of Illinois where he also has been recognized as an ECE Distinguished Alumni, is a Fellow of the IEEE, and holds 11 U.S. patents. Ken is an industry veteran, with 40 years of experience in technical management and system/circuit design, primarily in the area of wireless communications.
Coordinating Federal R&D: The National Coordination Offices
By Keith Marzullo, Dean of the College of Information Studies at the University of Maryland

Abstract
Many find searching for federal funding is a daunting task, because research is done across many agencies - some intramural, and some extramural. Indeed, Congress finds keeping track of the R&D efforts so important that they have set up National Coordination Offices (NCOs) to do the tracking, and to foster cooperation and coordination. Knowing about these NCOs and the reports they publish is a good way for researchers to find partners as well. I'll describe one NCO - the one that supports Information and Communications Technology R&D and the one that I directed, as well as present the other offices and related programs.

Biography

Keith Marzullo is the incoming Dean of the College of Information Studies at the University of Maryland, College Park ("Maryland's iSchool"). Prior to this, he was the Director of the Federal Networking and Information Technology Research and Development (NITRD) National Coordination Office (NCO). He also served as the Co-chair of the NITRD Subcommittee of the National Science and Technology Council (NSTC) Committee on Technology (CoT), where he oversaw the operations and activities of the NITRD Program. The NCO reports to the Office of Science and Technology Policy (OSTP), Executive Office of the President. Dr. Marzullo joined NITRD NCO from the National Science Foundation (NSF), where he served as the Division Director for the Computer and Network Systems (CNS) Division in the Computer & Information Science & Engineering (CISE) Directorate. He also served as Co-Chair of the NITRD Cybersecurity and Cyber Physical Systems R&D Senior Steering Groups. Dr. Marzullo came to NSF from the University of California, San Diego’s Computer Science and Engineering Department, and served as the Department Chair from 2006-2010.
**Wednesday**

**Nanotechnology Inspired Energy Efficient Computing – Perspective on a Grand Challenge**

By Sankar Basu, Program Director, US National Science Foundation

**Abstract**

Several national initiatives, e.g., the nanotechnology initiative, the brain initiative, and the national strategic computing initiative have been appealed to for rescuing the computing research (and industry) from the impending crisis resulting from end of Moore’s law. To this end, the Office of Science and Technology Policy (OSTP) recently issued a grand challenge in computing which may possibly involve new kinds of beyond silicon devices and novel non von-Neumann computing architectures. While the nature and demands of computing in the future may be shifting away from traditional applications, much of the thinking behind this grand challenge draws inspiration from the fact that the human brain can perform amazingly complex tasks with orders of magnitude lower power consumption unmatched by present day computing machines. In this talk, we will critique this approach and discuss some potential solutions being pursued by several groups both in academia and government funding agencies.

**Biography**

Sankar Basu is a permanent Program Director at NSF/CISE Directorate and came to NSF from the IBM T. J. Watson Research Center in 2002. Early in his career he served on the faculty of Stevens Institute of Technology, and had a short stint at Naval Underwater Systems Center, CT as a visiting senior scientist. He was also at the Ruhr University, Bochum, Germany as an Alexander von Humboldt fellow, and the MIT Laboratory for Information and Decision Systems (LIDS) for extended periods. During 2012 he served as science advisor to the US Embassy in Berlin, Germany as a State Department Embassy Science Fellow.

His NSF program portfolio includes design automation of micro and nano systems. In the past he has also worked on circuits systems signal processing and statistical machine learning.

He is a Fellow of the IEEE (2001), a Fellow of the AAAS (2010), and recipient of an SRC award (2011) for Enhancing the Mission of SRC and NSF through Collaboration.
Tutorials

Sunday

1. **Design Automation for 3D Chip Stacks: Challenges and Solutions**  
   By Johann Knechtel and Ibrahim (Abe) M. Elfadel, Masdar Institute of Science and Technology, UAE

2. **Performance, Power and Energy-Efficiency Insightful Modeling of Multi-Cores**  
   by Leonel Sousa, Universidade de Lisboa, Portugal

3. **Security Assurance in SoCs**  
   by Arun Kanuparthi and Hareesh Khattri, Intel Corporation, USA
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