Electrical & Computer ENGINEERING

Carnegie Mellon University

Seminar

DSN-I Seminar Series - The Quest for Energy Aware Computing

Diana Marculescu

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Seminar abstract

How do natural systems endure and how is nature inherently renewable? Can we learn from the supreme engineer - nature - how to design systems that are either energy aware by themselves or aid in achieving true sustainability in man-made systems? Electronic system design has benefited from decades of reliable and predictable functionality, but this trend is likely to slow down in future technology nodes. To support a path toward energy aware computing, a holistic approach toward addressing energy awareness, reliability, and variability at all the levels in the system is required. Furthermore, while design tools and methodologies for individual systems is relatively mature, achieving true energy efficiency for many real-life applications is still emerging. This talk will discuss our work on achieving superior performance and power efficiency for silicon systems in the presence of challenges induced by manufacturing process uncertainties and will unravel applications of classic tool sets to the design and analysis of large scale real-life applications.

Speaker bio

Diana Marculescu is a Professor of Electrical and Computer Engineering at Carnegie Mellon University. She received the Dipl.Ing. degree in computer science from the Polytechnic University of Bucharest, Bucharest, Romania, and the Ph.D. degree in computer engineering from the University of Southern California, Los Angeles, CA, in 1991 and 1998, respectively. Her current research interests include energy- and reliability-aware computing, and more recently, in CAD for non-silicon applications, including computational biology and sustainability. Diana was a recipient of the National Science Foundation Faculty Career Award from 2000 to 2004, the ACM SIGDA Technical Leadership Award in 2003, the Carnegie Institute of Technology George Tallman Ladd Research Award in 2004, and the Best Paper Award at the IEEE Asia and South Pacific Design Automation Conference in 2005, the Best Paper Award at the IEEE International Conference on Computer Design in 2008, the Best Paper Award at the International Symposium on Quality Electronic Design in 2009, and the Best Paper Award at the IEEE Trans. on Very Large Scale Integrated (VLSI) Systems in 2011. She was an IEEE Circuits and Systems Society Distinguished Lecturer from 2004 to 2005 and the Chair of the Association for Computing Machinery (ACM) Special Interest Group on Design Automation from 2005 to 2009. She is an IEEE Fellow and an ACM Distinguished Scientist. Diana was the Technical Program Chair of the ACM/IEEE International Workshop on Logic and Synthesis in 2004, the ACM/IEEE International Symposium on Low Power Electronics and Design in 2006, and the General Chair of the same symposia in 2003 and 2007, respectively. She also served as the Technical Program Chair of the IEEE/ACM International Symposium on Networks-on-Chip in 2012, the IEEE/ACM International Conference on Computer-Aided Design in 2013, and is currently the General Chair for the same conferences. Diana has served as an Associate Editor for the IEEE Transactions on VLSI Systems and the ACM Transactions on Design Automation of Electronic Systems. She was recently selected as an ELATE Fellow (2013-2014), and is the recipient of an Australian Research Council Future Fellowship (2013-2017) and the Marie R. Pistilli Women in EDA Achievement Award (2014).

Seminar notes: Light snacks and beverages will be served.

The DSN-I Seminar Series is hosted by the Device Science and Nanofabrication Initiative. DSN-I Seminars target researchers in micro and nanofabrication technologies or devices, with the goal of strengthening the user community of the new Scott Hall nanofabrication facility and other shared infrastructure.