



北京大学高能效计算与应用中心学术报告

Invited Talk, Center for Energy-Efficient Computing and Applications

RELIABLE AND ENERGY-EFFICIENT CIRCUIT DESIGN IN THE ERA OF INTERNET OF THINGS

Prof. Deming Chen

Electrical and Computer Engineering
University of Illinois, Urbana-Champaign

2016年5月26日 星期四 10:00am

第三教学楼206教室



ABSTRACT: The Internet has become the most pervasive technology, which has infiltrated every aspect of our lives. It is predicted that there will be 50 billion devices connected in the Internet of Things (IoT) by 2020. This explosion of devices naturally demands low design cost and fast time-to-market for producing highly energy-efficient ICs. Meanwhile, big data accumulated through these devices need to be processed timely, which demands high processing power under energy constraints for datacenters. Such substantial demands on high performance and energy efficiency in different markets would lead to continued increases of IC complexity and capacity. In addition, how to guarantee that the fast-growing IoT continues to operate reliably with high security remains a challenge. Given all these new trends, a significant problem facing the industry is that the design productivity for complex ICs has been lagging behind. In this talk, Dr. Chen will present a set of new design automation techniques to drastically improve design productivity targeting high circuit performance and energy efficiency with guaranteed circuit reliability and robustness. He will also present some new solutions and their potential impact in the areas of low-power sensors, wearable and flexible circuits, as well as new devices with emerging technologies that might be essential to sustain the future growth and pervasivity of IoT.

BIOGRAPHY: Dr. Deming Chen obtained his BS in computer science from University of Pittsburgh, Pennsylvania in 1995, and his MS and PhD in computer science from University of California at Los Angeles in 2001 and 2005 respectively. He worked as a software engineer between 1995-1999 and 2001-2002. He joined the ECE department of University of Illinois, Urbana-Champaign in 2005, and currently is a full professor in the same department. His main research interests include system-level and high-level synthesis, GPU and reconfigurable computing, hardware security, and computational genomics. Dr. Chen is a technical committee member for a series of conferences and symposia. He is (or has been) an associated editor for TCAD, TODAES, TVLSI, TCAS-I and II, JCSC, and JOLPE. He obtained the Achievement Award for Excellent Teamwork from Aplus Design Technologies in 2001, the Arnold O. Beckman Research Award from UIUC in 2007, the NSF CAREER Award in 2008, and six Best Paper Awards for ASPDAC'09, SASP'09, FCCM'11, SAAHPC'11, CODES+ISSS'13, and ICCAD 2015. He is included in the List of Teachers Ranked as Excellent in 2008. He received the ACM SIGDA Outstanding New Faculty Award in 2010, and IBM Faculty Award in 2014 and 2015. He is a Donald Biggar Willett Faculty Scholar. Dr. Chen was involved in two startup companies. He implemented his published algorithm on CPLD technology mapping in Aplus Design Technologies, Inc. in 2001, and the software was exclusively licensed by Altera and distributed to many customers worldwide. He is a co-inventor of the xPilot High Level Synthesis package developed at UCLA, which was licensed to AutoESL Design Technologies, Inc.