

**THE DEPARTMENT OF COMPUTER SCIENCE & THE COMPUTER SCIENCE
GRADUATE STUDENT ORGANIZATION (GSOCS) PRESENT**

INVITED SPEAKER SERIES

Professor Jason Cong

**Distinguished Chancellor's Professor, UCLA Computer Science Department
Director, Center for Customizable Domain-Specific Computing**

Tuesday, April 10th at 11:45 AM, Engineering Building Room 110

Computing Near the End of Moore's Law

Abstract: As we get close to the end of Moore's Law, one cannot rely on simple frequency or core scaling to improve the performance. In the past decade, our research in the Center for Domain-Specific Computing (CDSC) focused on computing systems which are customizable with extensive use of accelerators. Such an accelerator-rich architecture presents a fundamental departure from the classical von Neumann architecture. In this talk, I shall first present an overview of our research on customizable computing, from single-chip, to server node, and to data centers, with extensive use of composable accelerators and field-programmable gate-arrays (FPGAs). I shall highlight our successes in several application domains, such as machine learning and computational genomics. Then, I present our ongoing work on enabling automation for customized computing. I shall highlight the algorithmic and implementation challenges and our solutions to many of these compilation and runtime optimization problems.

Bio: Jason Cong received his B.S. degree in computer science from Peking University in 1985, his M.S. and Ph. D. degrees in computer science from the University of Illinois at Urbana-Champaign in 1987 and 1990, respectively. Currently, he is a Distinguished Chancellor's Professor at the UCLA Computer Science Department, and the director of Center for Customizable Domain-Specific Computing (CDSC). He served as the department chair from 2005 to 2008. Dr. Cong's research interests include electronic design automation, energy-efficient computing, customized computing for big-data applications, and highly scalable algorithms. He has over 400 publications in these areas, including 10 best paper awards, three 10-year most influential paper awards, and the 2011 ACM/IEEE A. Richard Newton Technical Impact Award in Electric Design Automation. He was elected to an IEEE Fellow in 2000 and ACM Fellow in 2008. He received the 2010 IEEE Circuits and System (CAS) Society Technical Achievement Award (TAA) and the 2016 IEEE Computer Society Technical Achievement Award. He was elected to the National Academy of Engineering in 2017.

Dr. Cong has graduated 36 PhD students. Nine of them are now faculty members in major research universities, including Cornell, Fudan Univ., Georgia Tech., Peking Univ., Purdue, SUNY Binghamton, UCLA, UIUC, and UT Austin. One of them is now an IEEE Fellow, six of them got the highly competitive NSF Career Award, and one of them received the ACM SIGDA Outstanding Dissertation Award. Dr. Cong has successfully co-founded two companies with his students, including Aplus Design Technologies for FPGA physical synthesis and architecture evaluation (acquired by Magma in 2003, now part of Synopsys), and AutoESL Design Technologies for high-level synthesis (acquired by Xilinx in 2011). Currently, he is a co-founder and the chief scientific advisor of Falcon Computing Solutions, a startup dedicated to enabling FPGA-based customized computing in data centers.