



ON THE DEPLOYMENT OF ON-CHIP NOISE SENSORS

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ABSTRACT: The relentless technology scaling has led to significantly reduced noise margin and complicated functionalities. Accordingly, with demanding resource constraints, design time techniques per se are less likely to ensure power integrity. Recently several works have shed light on the possibilities of runtime noise management systems, most of which rely on on-chip noisesensors to accurately capture voltage emergencies. However, they all assume, either implicitly or explicitly, that the locations and thresholds of the sensorsare given. It remains open problems how to optimally place a given number ofnoise sensors and how to optimally set their thresholds for best voltage emergency detection. This talk will shed light on both problems from a statistical perspective.

BIOGRAPHY: Dr. Yiyu Shi is currently an associate professor in the Departments of Computer Science and Engineering and Electrical Engineering at the University of Notre Dame. He received his B.S. degree (with honors) in Electronic Engineering from Tsinghua University, Beijing, China in 2005, the M.S and Ph.D. degree in Electrical Engineering from the University of California, Los Angeles in 2007 and 2009 respectively. He was with the Electrical and Computer Engineering Department at Carnegie Mellon University from Dec 2009 to April 2010. He was then an assistant professor in the Electrical and Computer Engineering Department at Missouri University of Science and Technology from 2010 to 2015, where he co-founded and co-directed the NSF I/UCRC Net-Centric Software and Systems Center. His current research interests include three-dimensional integrated circuits, hardware security and renewable energy applications. In recognition of his research, seven of his papers have been nominated for the Best Paper Award and one paper have received the Best Paper in Track, all in top conferences (DAC'05, ICCAD'07, ICCD'08, ASPDAC'09, DAC'09, ISPD'13, ICCAD'14, ISPD'15). He was also the recipient of IBM Invention Achievement Award in 2009, Japan Society for the Promotion of Science (JSPS) Faculty Invitation Fellowship, Humboldt Research Fellowship for Experienced Researchers, IEEE St. Louis Section Outstanding Educator Award, Academy of Science (St. Louis) Innovation Award, Missouri S&T Faculty Excellence Award, National Science Foundation CAREER Award, IEEE Region 5 Outstanding Individual Achievement Award, all in 2014, and the Air Force Summer Faculty Fellowship in 2015. He has served on the technical program committee of many international conferences including DAC, ICCAD, ISPD, ASPDAC and ICCD. He is also an associate editor of ACM Journal on Emerging Technologies in Computing Systems, IEEE VLSI Circuits and Systems Newsletter, and ACM SIGDA Newsletter. He is a senior member of IEEE.