

iVAMS: A Paradigm Shift System Simulation Framework for the IoT Era (Keynote Presentation Abstract)

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Abstract:

To mitigate the problems of very fast urban population growth in existing cities with limited resources, smart cities are envisioned. The smart cities may use one of multiple smart components including smart technology, smart healthcare, smart grids, smart transportation, smart buildings, smart communications, and smart information technology. The Internet of Things (IoT) is considered as the core technology that can enable the design and operation of such smart cities. The term IoT refers to the interconnection of “things” which may include buildings, energy-grids, transport-systems, and health-care systems, which need not be inherently smart or intelligent. IoT enables the communication of many diverse types of such “things” and applications for providing increasingly smart, reliable and secure services. The IoT infrastructure consists of various components including sensors, electronics, networks, middleware, firmware, and software. One of the research questions in this scenario is the simulation and design exploration of nanoelectronic and multidiscipline systems and components of IoT. Another possible research question in this scenario is the design exploration of nanoelectronic and multidiscipline systems and components of IoT for Design for excellence (DFX). In this talk a paradigm shift simulation and optimization framework called “intelligent” Verilog-AMS (iVAMS) will be discussed which has system-level high speed and physical level accuracy. iVAMS can be a framework for simulation and design optimization for the diverse components of IoT infrastructure.

Speaker Biography:



Dr. Saraju P. Mohanty is Professor at the Department of Computer Science and Engineering (CSE), University of North Texas (UNT), where he directs the NanoSystem Design Laboratory (NSDL). He obtained a Ph.D. in Computer Engineering from the University of South Florida (USF) in 2003, a Master's degree in Systems Science and Automation (SSA) from the Indian Institute of Science (IISc), Bangalore, India in 1999, and a Bachelor's degree (Honors) in Electrical Engineering from Orissa University of Agriculture and Technology (OUAT), Bhubaneswar, India in 1995. Prof. Mohanty's research is in “Low-Power High-Performance Secure Electronic Systems”. Prof. Mohanty's research has been funded by National Science Foundation (NSF), Semiconductor Research Corporation (SRC), and Air Force. Dr. Mohanty is an inventor of 4 US patents. Prof. Mohanty is an author of 200 peer-reviewed journal and conference articles, and 3 books. The publications are well-received by the world-wide peers with a total of 2,300 citations leading to an h-index of 24 and i10-index of 60 (from Google Scholar). His latest book titled Nanoelectronic Mixed-Signal System Design is published by McGraw-Hill in 2015 is a best seller. This book received 2016 PROSE (Professional & Scholarly Excellence) Award for best Textbook in Physical Sciences & Mathematics from the Association of American Publishers (AAP). Prof. Mohanty has been serving on the editorial board of several peer-reviewed international journals or transactions. He currently serves on the editorial board of 6 peer-reviewed international journals, including IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems

(TCAD), ACM Journal on Emerging Technologies in Computing Systems (JETC), and IET Circuits, Devices & Systems Journal (CDS). He is currently Editor in Chief (Designate) of the IEEE Consumer Electronics Magazine. He serves as a founding Editor in Chief (EiC) of the VLSI Circuits and Systems Letter (VCAL). He has been serving as a guest editor for many prestigious journals including ACM Journal on Emerging Technologies in Computing Systems (JETC) and IEEE Transactions on Emerging Topics in Computing (TETC). Prof. Mohanty currently serves as the Chair of Technical Committee on Very Large Scale Integration (TCVLSI), IEEE Computer Society (IEEE-CS) to oversee a dozen of IEEE conferences. He serves on the organizing and program committees of several international conferences. He serves on the steering committee of the IEEE-CS Symposium on VLSI (ISVLSI). He is the founder conference chair for the IEEE International Symposium on Nanoelectronic and Information Systems (IEEE-iNIS). He was a conference chair for the IEEE-CS Symposium on VLSI (ISVLSI) 2012 and 2014. Prof. Mohanty is a senior member of IEEE and ACM. Prof. Mohanty has supervised 7 Ph.D. dissertations and 24 M.S. theses; seven of these advisees have received outstanding student awards at UNT. He has received Honors Day recognition as an inspirational faculty at the UNT for multiple years. He has also received UNT Provost's Thank a Teacher recognition for multiple years. More about his biography, research, education, and outreach activities can be obtained from his website: <http://www.smohanty.org>.