Title: Security of the Internet of Things: Can Hardware Save the Game?

Speakers: Swarup Bhunia, Professor and Steven Yatauro Faculty Fellow, Electrical and Computer Eng., University of Florida, Gainesville, Florida

Abstract:

Security has become a critical design challenge for modern electronic hardware. With the emergence of the Internet of Things (IoT) regime that promises exciting new applications from smart cities to connected autonomous vehicles, security has come to the forefront of the system design process. Recent discoveries and reports on numerous security attacks on microchips and circuits violate the well-regarded concept of hardware trust anchors. It has prompted system designers to develop wide array of design-for-security and test/validation solutions to achieve high security assurance for electronic hardware, which supports the software stack. At the same time, emerging security issues and countermeasures have also led to interesting interplay between security, verification, and interoperability. Verification of hardware for security and trust at different levels of abstraction is rapidly becoming an integral part of the system design flow. The global economic trend that promotes outsourcing of design and fabrication process to untrusted facilities coupled with the prevalent practice of system on chip design using untrusted 3rd party intellectual property blocks (IPs), has given rise to the critical need of trust verification of IPs, system-on-chip design, and fabricated chips. The talk will also cover spectrum of security challenges for IoTs and describe emerging solutions in creating secure trustworthy hardware that can enable IoT security for the mass.

Biography:

Swarup Bhunia is a preeminence professor of cybersecurity and Steven Yatauro endowed faculty fellow of Computer Engineering at University of Florida, FL, USA. Earlier he was appointed as the T. and A. Schroeder associate professor of Electrical Engineering and Computer Science at Case Western Reserve University, Cleveland, OH, USA. He has over twenty years of research and development experience with 250+ publications in peer-reviewed journals and premier conferences and six authored/edited books. His research interests include hardware security and trust, adaptive nanocomputing and novel test methodologies. Dr. Bhunia received IBM Faculty Award (2013), National Science Foundation career development award (2011), Semiconductor Research Corporation Inventor Recognition Award (2009), and SRC technical excellence award (2005) as a team member, and several best paper awards/nominations. He is co-founding editor-in-chief of a Springer journal on hardware and systems security. He has been serving as an associate editor of IEEE Transactions on CAD, IEEE Transactions on Multi-Scale Computing Systems, ACM Journal of Emerging Technologies, and Journal of Low Power Electronics; served as guest editor of IEEE Design & Test of Computers (2010, 2013) and IEEE Journal on Emerging and Selected Topics in Circuits and Systems (2014). He has served as co-program chair of IEEE IMS3TW 2011, IEEE NANOARCH 2013, IEEE VDAT 2014, and IEEE HOST 2015, and in the program committee of several IEEE/ACM conferences. Dr. Bhunia received his PhD from Purdue University on energy-efficient and robust electronics. He is a senior member of IEEE.