Internet of Things (IOT) Security: Issues, Innovations, and Interplays

12th -16th December 2016, Department of CSE, Indian Institute of Technology Patna

Overview

Internet of Things (IoT) has emerged into a rapidly growing application space of paramount significance that promises a staggering 75 billion connected devices to be embedded in our environment within the next five years. Fuelled by higher level of computing efficiency and miniaturization coupled with ubiquitous connectivity, IoT devices create new application opportunities in diverse domains – from smart implants/wearables to smart homes and smart cities. With continued advances in technology, design of new and advanced sensors, pervasive connectivity, and the trend in business towards cloud-driven data-centric solutions, the future is projected to see an even higher proliferation of electronic systems comprising of such devices that coordinate through cloud to solve complex, distributed tasks.

While the IoT space provides huge set of opportunities to manufacturers and consumers alike, it creates new demands in terms of security, trust, and privacy in the computing and communication platforms used in these devices. The unique demands of diverse IoT systems including their ubiquitous connectivity and long life in potentially harsh environments, make them vulnerable to many security issues, including unprecedented ones. This panel will focus on some of the pressing issues related to IoT security and privacy, which are relevant to both industry and academia, challenges, and emerging solutions.

This short course will consist of several lectures and interactive discussion sessions, which will cover general security issues, solutions as well as specific case studies related to the security issues and solutions during the design and deployment of example IoT devices including smart implants, wearables, and drones. The course will touch upon several fundamental questions in this field, as below, and stimulate interest in students and researchers to explore further.

Modules	**Module A: Computer security in Internet-of-Things (**IoT) **space** **Module B: Security architecture of IoT and chellenges** Number of participants for the course will be limited to fifty.
You Should Attend If…	▪ you are an Electrical/electronics/computer engineer or research scientist interested in designing IOT related systems or interested to learn IOT applications. ▪ you are a student or faculty from academic institution interested in learning how to do research on IOT system or subsystem or want to develop an IOT application and security issues
Fees	The participation fees for taking the course is as follows: **Participants from abroad : US $250** **Industry/ Research Organizations: Rs. 2500** **Academic Institutions: Rs. 1000** The above fee include all instructional materials, computer use for tutorials and assignments, laboratory equipment usage charges, 24 hr free internet facility. The participants will be provided with accommodation on payment basis.

Teaching Faculty

Swarup Bhunia received his Ph.D. from Purdue University in 2005. Currently he is a professor of Electrical and Computer Engineering at University of Florida. Earlier he was the T. and A. Schroeder Associate Professor of Electrical Engineering and Computer Science at Case Western Reserve University, Cleveland, OH, USA. He has over fifteen years of research and development experience with over 200 publications in peer-reviewed journals and premier conferences in the area of integrated circuit and system design, computer-aided design tools and test techniques. Dr. Bhunia received the IBM Faculty Award, National Science Foundation

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(NSF) career development award, Semiconductor Research Corporation (SRC) technical excellence award as a team member, several best paper awards and best paper nominations, and SRC Inventor Recognition Award. He has been serving as an associate editor of IEEE Transactions on CAD, IEEE Transactions on Multi-Scale Computing Systems, Springer Journal of Electronic Testing, ACM Journal of Emerging Technologies, and Journal of Low Power Electronics; served as guest editor of IEEE Design & Test of Computers (2010, 2013), IEEE Journal on Emerging and Selected Topics in Circuits and Systems (2014), and IEEE Computer (2016). He has given numerous invited talks and tutorials on diverse topics related to computer security and energy-efficient adaptive electronic systems. He is co-founder of a start-up company, Hakham Systems, which focuses on developing hardware module for cyber security training. He is a senior member of IEEE. More information: http://swarup.ece.ufl.edu/

Rajat Subhra Chakraborty is an Associate Professor in the Computer Science and Engineering Department of Indian Institute of Technology Kharagpur. He has a Ph.D. in Computer Engineering from Case Western Reserve University and a B.E. (Hons.)in Electronics and Telecommunication Engineering from Jadavpur University (India) in 2005. His research interests include: Hardware Security, VLSI Design and Design Automation, and Reversible Watermarking. He holds two U.S. patents, and is the co-author of three published books, six book chapters, and close to 75 publication sin international journals and conferences of repute. His work has received about 1400 citations. He has served as a guest editor of ACM Transactions on Embedded Computing Systems. Dr. Chakraborty has received IBM Faculty Award, IBM Shared University Research Award and Royal Academy of Engineering (U.K.) Research Exchange Fellowship. He is a senior member of IEEE. For more information visit: http://cse.iitkgp.ac.in/~rschakraborty

Course Coordinators /Host Faculties

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Jimson Mathew is currently an Associate Professor in the Computer Science and Engineering Department, Indian Institute of Technology Patna, India. His research interests include fault-tolerant computing, computer arithmetic, hardware security, very large scale integration design and automation, and design of nano scale circuits and systems and cognitive radio systems.