

TUTORIAL – 3 hours

Energy Efficient Computing and Security Issues in Internet of Things

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Abstract:

Internet of Things (IoT) is getting popularity in recent time and has started playing an important role in different aspects of human life. Healthcare, Agriculture, Home Sophistication or Automation, Transportation, Industry Automation etc. are various application areas of IoT. Internet of Things is a smart idea of connecting different “thing” through a communication or networking system and bringing those into one frame. The term “thing” incorporates sensors, actuators, programs, services, and any other objects may be integrated with Radio Frequency Identification (RFID) tags. IoT has also been applied in cloud to reduce costs and enhance performance. Although there are several IoT based applications successfully deployed in different application domains, some issues related to energy efficiency and security of the IoT devices still exist and need attention of the researchers. Power consumption by different IoT devices against computation and communication is an important issue as it is likely to be linked with the lifetime of the underlying communication network also. Similarly, security is an extremely important aspect of IoT. Interestingly, IoT is not secure at this moment, and it cannot be expected to be secure in the future either. Agenda is that one has to be aware about the security issues at the present moment, and make effort to put possible defence mechanisms against those security threats. Security is a continuously evolving area in which one needs to be ready to meet new challenges. This tutorial shall cover both the aspects of IoT. In first part of it, energy efficiency issue of IoT shall be discussed and current research challenges in this direction shall be highlighted. The second part of the tutorial shall cover the security aspects of IoT. Security challenges, countermeasures and recent trends in security of IoT shall be discussed. Moreover, nature inspired computing based security countermeasures will be discussed with a highlight of future research scope.



Short Bio of the Speaker:

Hiren Kumar Deva Sarma, Ph. D., is currently a Professor in the Department of Information Technology, Gauhati University, Guwahati, Assam, India. He received B.E. (Bachelor of Engineering)

degree in Mechanical Engineering from Assam Engineering College, Guwahati, Assam in 1998. He completed M.Tech (Master of Technology) in Information Technology from Tezpur University, Tezpur, Assam in 2000. He received a Ph.D.(thesis topic: routing issues in wireless sensor networks) degree from Jadavpur University (Department of Computer Science and Engineering), Jadavpur, West Bengal in 2013. He is the recipient of Young Scientist Award from International Union of Radio Science (URSI), in the XVIII General Assembly 2005, held at New Delhi, India. Dr.Sarma also received IEEE Early Adopter Award in 2014. He has published more than ninety research papers in different International Journals, and referred International and National Conferences of repute. He has co-authored one reference book (in C programming) and co-edited five research books. His current research interests are wireless communication, cognitive radio networks, software defined networking, Internet of Things, and distributed computing.