Seminar on IoT and Research methodology

At the Amritapuri campus, Dr. Anura Jayasumana (Professor of Electrical and Computer Engineering, and Associate Director of Information Science and Technology Center, Colorado State University, USA) gave two talks, held several discussions, and conducted interactive Q&A sessions with faculty, staff, researchers, and students from the Amrita Center for Wireless Networks and Applications, Ammachi Labs, the Amrita Center for Cyber Security Systems and Networks, the Department of Computer Science and Engineering, the Department of Electronics and Communication Engineering, and the Department of Electrical and Electronics Engineering.

The talk comprised of two sessions mainly,

- Session 1: “Internet of Things – A pervasive technology for innovation”
- Session 2: “Research Methodology and Strategy for quality paper publication”

The talk started by briefing the history of the internet and giving an overview of the emergence of IoT and its application in various areas. The development of the Internet of Things (IoT) has been there for the past 15 years in different names and forms. The prediction about the number of devices that are going to be connected to the internet is about 20 billion by 2016 and 50.1 billion by 2020. The devices include different types of sensors, smartphones, computers, and radars. According to the Wired magazine, IoT is going to be the most disruptive technology. According to McKinsey the economic impact of IoT would be $3.9 trillion to $11.1 trillion. As a matter of fact, the direct machine to machine (M2M) communication which is called ‘interchatter’ is on the rise every year. From an industry point of view, the top 2 beneficiaries of the IoT applications would be healthcare and manufacturing, however, the possibilities are unlimited and applicable to any industry. The things in IoT include Sensors, People, animals, Cameras, etc. IoT is the bridge between the digital world and the physical world. It ranges from Nanosensors, RFIDs, Cell phones, to sophisticated Radars systems. IoT devices have been already deployed in extreme environments to collect data that was previously inaccessible or confined to very limited data sets. The shared data from these devices help people from all over the world to do research and develop smarter intelligent systems. The data collected are mined to get meaningful information and do better predictions. IoT would be even for powerful and useful with Virtual Things that are implanting sensors to the human body, wearable devices, networks within a car and the like. The possibilities of IoT are really big but it comes with concerns as well. Some of the concerns are Privacy, Behaviour regulations (Ex. Police stopping the car with driver’s permission) and potential attack by hackers into the IoT networks and systems. There could be potential environmental problems also when it comes to disposing of millions of these unused sensors.

Based on the audience questions, Dr. Anura also touched upon topics, such as Compressive sensing, Reliability of the data quality, Network-Aware Nodes and environmental concerns related to IoT.

Dr. Jayasumana’s second talk titled, “Research Methodology & Strategy for Quality Paper Publication“, provided general pointers on how to improve one’s research skills, what approach to take at various stages of research, and how to accurately document and analyze research findings. The talk was well

attended by Ph.D. and Masters students, as well as young faculty and staff interested in getting into research. Mr. Unnikrishnan, a staff member at AMMACHI Labs who attended the talk, said, “Dr. Jayasumana encouraged everyone to read five papers a day and then go in-depth into a selected paper to identify the problem, discover how data was collected, and see how the paper was organized and written.”

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