

Lecture at INAE highlights Communication Technologies and Requirements for Industry 4.0

Indian National Academy of Engineering (INAE), Gurgaon an autonomous institute under Department of Science & Technology in association with Bharti School of Telecom and Technology Management, IIT Delhi and Institute of Electrical and Electronics Engineers (IEEE) Delhi Local Chapter organized a Lecture on Communication Technologies and Requirements for Industry 4.0 on February 3, 2020, at Indian Institute of Technology, Delhi.

The lecture by Professor Arumugam Nallanathan, Professor of Wireless Communications and Head of the Communication Systems Research Group in the School of Electronic Engineering and Computer Science at the Queen Mary University of London, highlighted the communication requirements and technologies for the revolution towards Industrial 4.0.

It also dwelt upon the recent advances in information theory for the transmission of short packets, which provide the theoretical principles that govern the practical design of system parameters, followed by proposed framework and methodologies to solve the key issues of ultra-high reliability and low latency communication (URRLC) that indispensably needed by Industry 4.0. The talk deliberated on directions for future research.

His research interests include Artificial Intelligence for Wireless Systems, 5G and beyond, Wireless Networks, Internet of Things (IoT), and Molecular Communications. He has published nearly 500 technical papers (including more than 200 top IEEE journal papers) in scientific journals and international conferences.

The Fourth Industrial Revolution (Industry 4.0) is coming, and this revolution will fundamentally enhance the way the factories manufacture products. The modern manufacturing industry will upgrade to a new era of productivity with the confidence to reinvent their business.

To realize this ambitious goal, the industry needs a solution that could support to access real-time information, eliminate downtime, production automation, empower employees with the freedom to work anywhere, anytime, etc. Therefore, the conventional wired lines connecting the central controller to robots or actuators will be replaced by wireless communication networks due to its low cost of maintenance and high deployment flexibility, which becomes an evitable trend. However, mission-critical industrial applications require ultra-high reliability and low latency communication (URLLC) that is not supported by our current wireless communication systems and is one of the primary cornerstones of the fifth-generation (5G). The lecture at INEA underlined the urgent need for rethinking the design of the communication system.