

Potential Applications and Challenges of 5G Networked Internet of Everything

Abstract:

The first development phase of 5G wireless technologies has recently ended with 3GPP Release 15 where several key 5G technologies such as massive MIMO, network slicing, software defined networking are adopted in the 5G standard. The next phase of 5G will be to develop enabling technologies to realize innovative and potential 5G applications. This technology wave is expected to fundamentally transform and digitalize many application domains enabled by internet of everything (IoE) connections and advanced data science technologies. Important 5G applications and use cases include autonomous and connected vehicles, drones/UAV, wireless virtual/augmented reality, industry IoT, and smart city. To realize these applications, research challenges related to data communications/networking, caching/storage, and computing (3C challenges) must be addressed to deal with a huge number of wireless connections, data management, and processing, respectively. In this talk, we first review some basic IoT communication aspects, applications, and standards. Then, potential benefits linked to the development of key 5G applications will be discussed and open research issues will be highlighted.

Biography:

Long Le received the B.Eng. degree in electrical engineering from Ho Chi Minh City University of Technology, Vietnam, in 1999, the M.Eng. degree in telecommunications from Asian Institute of Technology, Thailand, in 2002, and the Ph.D. degree in electrical engineering from the University of Manitoba, Canada, in 2007. He was a Postdoctoral Researcher at Massachusetts Institute of Technology (2008–2010) and University of Waterloo (2007–2008). Since 2010, he has been with the National Institute of Scientific Research (INRS), University of Quebec, Montréal, QC, Canada where he is currently an associate professor. His current research interests include emerging enabling technologies for 5G and beyond wireless systems, radio resource management, and smartgrids. He is a co-author of the books *Radio Resource Management in Multi-Tier Cellular Wireless Networks* (Wiley, 2013) and *Radio Resource Management in Wireless Networks: An Engineering Approach* (Cambridge University Press, 2017). Dr. Le is currently a member of the editorial board of IEEE TRANSACTIONS ON WIRELESS COMMUNICATIONS and IEEE COMMUNICATIONS SURVEYS AND TUTORIALS.