LTE-U and Wi-Fi Coexistence for Efficient Utilization of Unlicensed Spectrum

TeCIP Institute – Grey Room – 11:00 a.m.
2nd December 2019

Antony FRANKLIN

Apt-RAN: A Flexible Split-Based 5G RAN to Minimize Energy Consumption and Handovers

Abstract:

A promising solution satisfying the industry's demand to have minimum modification in LTE for its operation in unlicensed spectrum is duty cycled LTE-U scheme, which adopts discontinuous transmission to ensure fair coexistence with 802.11 (Wi-Fi) WLANs. Even though the scheme guarantees to maintain Wi-Fi network performance, the fairness among Wi-Fi users still remains arcane. In this talk, practical scenario where LTE-U, despite being discontinuous (by following an ON/OFF cycle), results in not only unfair throughput distribution among Wi-Fi users but also causes degradation in Wi-Fi APs downlink performance will be discussed. Also our proposed solution for WLANs to address the fairness issue, employing Point/Hybrid Coordination Function (PCF/HCF) mode of 802.11, promising fairness among Wi-Fi users with improvement in the channel utilization of Wi-Fi network will be discussed.

TeCIP Institute - White Room – 02:00 p.m.
3rd December 2019

Abstract:

The Cloud Radio Access Network (C-RAN) helps to reduce CAPEX and OPEX of mobile operators while improving the performance of radio resource allocation by splitting functionality of base station into Central Unit (CU) and Distributed Unit (DU). The C-RAN framework helps to achieve energy savings at the base stations along with improved data rates and battery life at the users by careful design of energy-aware joint resource allocation and power savings schemes. In this talk, a C-RAN prototype system using an open source platform, OpenAirInterface (OAI) to study the variation in energy consumption of base station for different functional split options of C-RAN will be discussed. Also, a mathematical model called Apt-RAN based on flexible functional splits that minimizes the total energy consumption and number of handovers by efficiently mapping neighboring DUs to same CU will be presented.

Short bio:

Dr. Antony Franklin received his Ph.D. degree in Computer Science and Engineering from the Indian Institute of Technology Madras, India, in 2010. He is currently working as an Associate Professor at Indian Institute of Technology Hyderabad (IITH), India. Before joining IITH, he worked as a Senior Engineer at DMC R&D Center, Samsung Electronics, South Korea between 2012 and 2015 where he was involved in the development of 5G networking technologies. He also worked as a Research Engineer in Electronics and Telecommunications Research Institute (ETRI), South Korea between 2010 and 2012 where he was involved in Cognitive Radio Technology research. His current research interests include development of next generation mobile network architecture and protocols such as Cloud Radio Access Networks (C-RAN), Mobile Edge Computing (MEC), Heterogeneous Networks, and Internet of Things (IoT).