Department of Electronics and Communication Engineering

Expert Lecture
on
"Advancement in Wireless Communications" on 22-Feb-2019

The lecture started at 10.30 AM in Mechanical department Seminar Hall. Dr. C. Venkataramanan and Dr. B. Senthil Kumar, Associate Professors, Department of ECE was addressing the participants about the importance of the event. The participants for the expert lecture were 160 Undergraduate students of ECE in SVEC. The Resource person Mr. Manikanta Varaprasad Pitchuka, Firmware Engineer, came from INTEL Corp - Bangalore.

The resource person took over the session at 10:40 AM discussing overview, Introduction to Wireless Communications, recent trends and applications of Wireless Communications, Channel models and design of Modems for future developments. He started the lecture from invention of the 1st generation to present scenario of cellular networks. He discussed briefly about advancements in Bandwidth Utilization towards Channel modeling. He briefly discussed the different examples for modem designs such as power management, operational amplifiers, and sensors that are performing the functions such as filtering, power distributing for different hardware components with in chip, mixers, and so on.

He focused on receiver design and the techniques used to minimize noise in channel as well as receiver entity. He also introduced how to integrate voice over data and its significant challenges, primarily due to noise coupling. He differentiated a strategy for channel modeling through estimation and prediction theory.

He also summarized that increase in frequency into the GHz; it becomes difficult to maintain the energy efficiency for channel to receiver circuits. The receiver designers can improve energy efficiency using different approaches, from selecting the optimum modulation and de-modulation technology to clever system-level design.

Finally he focused on increasing in load (i.e. consumers) has been steadily increasing over the years. More intelligence is being put into firmware design. Managing more system functions with optimized design will yield more cost-effective along with data rate enhancement. Adaptive power management and sensor integration are enhancing the quality of system energy.

He also discussed different intelligent modem architecture were the most appropriate for processing wideband signals with the required resolution. He suggested the recent advances in MIMO and OFDM technology have enabled new alternatives for wireless broadband communication systems. The integrated design of LNA, RF front end architecture in the receiver modem of broadband communication (interfaces, such as LTE (long-term evolution), WiMax, or 802.11abg) supports high data rate applications.

His current research interest is OFDM and MIMO design. He is currently working towards 5G modem design for INTEL corp. He also suggested the future scope and research avenues availed in this domain.

Resource person Mr. Manikanta Varaprasad Pitchuka delivering the lecture on '5G Modem design'.

Participants

Participant’s interaction with the resource person inquiring recent trends and applications in Wireless Communication.