Invited Seminar

Efficient and Error Resilient Transmission of Multimedia Data Over Wireless Cellular Networks

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Date: August 21, 2013  Time: 11:00 am – 11:50 am  Place: SSOE Seminar Room NI-1027

Abstract: Due to bandwidth variability and erroneous nature of wireless networks, transporting compressed images or other multimedia data with a guaranteed Quality of Service (QoS) is a challenging task. Currently developed image compression standard JPEG 2000 (also known as JPEG2K) tackles some of these issues in a limited sense and there is need to look well beyond the current standardization works. One of the major problems with wavelet based coding algorithms is its sensitivity to channel errors. The coded bitstreams are highly prone to the channel error and a single bitstream can damage the entire image. Generally the efficiency of image coders and their error resilience properties are contradicting features. This makes them unsuitable for time varying erroneous channels that are encountered in wireless networks. This talk will introduce the research work being carried out at UniMAP to overcome such a problem of wavelet based image coders by utilizing the features of multi-carrier hierarchical modulation schemes. Multi-carrier modulation in its various forms has become a well-established modulation method. It is also expected to be a serious contender for fourth generation wireless networks. The talk will look into opportunities offered by multi-carrier modulation the desirable soft capacity properties for packet services, that is, the capacity that can be conveniently adjusted according to the perceived sub-channel signal-to-noise ratio. If the capacity is less than ideal, a trade-off becomes possible- either send only the higher priority packets or accept a transmission delay. Using such methods based on hierarchical QAM constellation, it would be possible to make speculative transmission attempts without unduly compromising either high priority information or traffic in other sub-channels.

Speaker Biography

Farid Ghani obtained B.Sc.( Engg.) in Electrical Engineering and M.Sc. (Engg.) in Measurement and Control from Aligarh Muslim University (A.M.U) India, in 1964 and 1966, respectively. In 1970 he proceeded to England for higher studies and obtained M.Sc. in Digital Signal Processing in 1972 and Ph.D. in Digital Communication Systems in 1974, from Loughborough University Of Technology (U.K ). Dr Farid Ghani is currently working as Professor of Communication Engineering at Universiti Malaysia Perlis since 2008. Earlier he worked as Professor of Communication (1982 - 2004) at Aligarh Muslim University, Aligarh, India, Professor and Head of Electronics Engineering Department (1986 - 1991) at Al-Fateh University, Libya, and Professor of Communication (2002 – 2007) at Universiti Sains Malaysia. While at Aligarh he also worked as Director Academic Programs of the University, Dean of the Faculty of Engineering and Technology and Principal Z.H. College of Engineering and Technology. Professor Ghani is Fellow of Institution of Engineering and Technology IET (UK), life Fellow of Institution of Electronics and Telecommunication Engineers IETE (India) and life Fellow of National Telmatic Forum NTF (India). He is a Member of the Institution of Electronics, Information, and Communication Engineers IEICE (Japan) and is also registered with the Council of Engineers (UK) as Chartered Engineer.