

ITeG Research Talk

Professor Jae Hong Lee

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„Cognitive Radio for Wireless Communications: Concepts and Applications“



Jae Hong Lee received his Ph.D. from the University of Michigan at Ann Arbor in 1986. He was with AT&T Bell Laboratories and joined Seoul National University for which he is currently a professor and served as Director of Institute of New Media and Communications, and Chairman of EECS Department.

His research activities are in physical layer wireless communications such as MIMO, cooperative diversity, cognitive radio, energy harvesting and HetNet, and their applications to 5G wireless systems. He served as chairman of the committee for coordination of 3G wireless communication technology development in Korea and was principal investigator in communications for ITS Grand Design Project of the Korean government. His laboratory was designated as a National Leading Research Laboratory by Ministry of Science and Technology of Korea.

Jae Hong Lee was President of the Korean Society of Broadcast Engineers, President of the Institute of Electronics Engineers of Korea, and President of the IEEE Vehicular Technology Society. He is an IEEE Fellow and IEEE VT Society Distinguished Speaker.

Abstract: To meet rapidly growing traffic demands and accommodate large number of devices, more radio spectrum is needed for future wireless communications. Considering the scarcity of radio spectrum, it is needed to enhance the utilization of radio spectrum licensed exclusively to specific users. In cognitive radio, an unlicensed user, called a secondary user, is permitted to access the spectrum allocated to a licensed user, called a primary user. When the primary and secondary users transmit their signals simultaneously, interference occurs at both users which degrades their performance. Interference at the primary user can be avoided by spectrum sensing technique which prohibits a secondary user from transmitting its signal when it detects a primary user's signal. Also, interference level at the primary user can be limited below a certain threshold by spectrum sharing technique in which the secondary user adjusts its transmit power accordingly. Some recent results on cognitive radio are introduced, and its applications and future research subjects are shown.

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