Karlsruhe Institute of Technology

Institute of Radio Frequency Engineering and Electronics

UWB technology for imaging and localization

Talk by Dr. Somayyeh Chamaani, K.N. Toosi University of Technology,
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Ultra wideband (UWB) signals inherently provide two features of high channel capacity and good spatial resolution. After standardization of UWB, in spite of initial achievements, the first feature of high channel capacity was not widely commercialized in communication systems. However, the second feature, good spatial resolution became very attractive for imaging and localization. Since early 2000, various methods for generating and capturing of UWB signals were introduced and there are now some inexpensive well-developed sensors for microwave imaging which mostly use time domain approach. On the other hand, entering to the Internet Of Things (IOT) world, requires real time tracking of things. Weakness of GPS and other narrowband technologies in indoor environments, has made UWB as gold solution for real time locating systems (RTLS). The talk presents some of the research efforts of our group in using UWB technology for imaging and RTLS.

Dr. Somayyeh Chamaani received the B.S. degree in electrical engineering from the Sharif University of Technology in 2004, and the M.S. and Ph.D. degrees in electrical engineering from the K. N. Toosi University of Technology in 2006 and 2011, respectively. She joined the K. N. Toosi University of Technology in 2011 as an Assistant Professor of Electrical Engineering. Her research group focuses on UWB technology: UWB Radar, UWB Imaging, UWB localization, and UWB antennas. Her second area of interest is body area applications, including localized hyperthermia using phased array antennas, in-body to off-body channel modeling and communications, and wearable antennas.