

Wireless Device-to-Device Communications and Networks

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Abstract:

Mobile data traffic, especially mobile video traffic, has dramatically increased in recent years with the emergence of smart phones, tablets, and various new applications. It is hence crucial to increase network capacity to accommodate these bandwidth consuming applications and services. D2D communication, which has been listed in 3GPP as a study item, is a promising concept to improve user experiences and resource utilization in cellular networks, both for licensed and unlicensed spectrum. However, design, analysis, and optimization of D2D communications & networking require multidisciplinary knowledge, such as wireless communication and networking, signal processing, artificial intelligence (e.g., for learning), decision theory, optimization, and economic theory. Therefore, this tutorial, containing the basic concepts/theories for addressing research advances that enable D2D communications in cellular networks, the state-of-the-art of research and development and the related information, will be useful in designing D2D-based wireless communications systems and services.

Bio:

Zhu Han received the B.S. degree in electronic engineering from Tsinghua University, in 1997, and the M.S. and Ph.D. degrees in electrical engineering from the University of Maryland, College Park, in 1999 and 2003, respectively. From 2000 to 2002, he was an R&D Engineer of JDSU, Germantown, Maryland. From 2003 to 2006, he was a Research Associate at the University of Maryland. From 2006 to 2008, he was an assistant professor in Boise State University, Idaho. Currently, he is an Assistant Professor in Electrical and Computer Engineering Department at University of Houston, Texas. His research interests include wireless resource allocation and management, wireless communications and networking, game theory, wireless multimedia, and security. Dr. Han is an NSF CAREER award recipient 2010. Dr. Han is an Associate Editor of IEEE Transactions on Wireless Communications since 2010. Dr. Han is the winner of the 2011 IEEE Communications Society Fred W. Ellersick Prize. Dr. Han is the coauthor for the papers that won several best paper awards in IEEE International Conferences. Since 2014, Dr. Han is IEEE Fellow.