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THE DEPARTMENT OF ELECTRICAL ENGINEERING AND COMPUTER SCIENCE, CS DIVISION

Presents the Fall 2013 EECS Seminar Series

Dr. Swades De
Indian Institute of Technology, Delhi

"User-centric Optimizations for Multimedia Broadcast over Wireless"
Friday, December 13, 2013 • 2:00 p.m. • HEC 356

Abstract

In this talk we will present a novel cross-layer optimization framework to improve the quality of user experience (QoE) and energy efficiency of the heterogeneous broadcast users. We will discuss how this joint optimization is achieved by grouping the users based on their device capabilities and estimated channel conditions, and then deciding on the broadcast content adaptation. The adaptive multimedia content is obtained by using scalable video coding (SVC) with optimal source encoding parameters resulted from an innovative cooperative game. Energy saving at user terminals results from using a layer-aware time slicing approach in the transmission stage. To this end, we will discuss the tradeoff between energy saving and QoE. We will further discuss how the broadcast reception quality is increased along with the network broadcast capacity by incorporating adaptive modulation and coding scheme. Finally, we will present how this cross-layer adaptive approach helps address the service provider's utility maximization. Although the current framework has been tested on digital video broadcast – hand-held (DVB-H) standard, the proposed ideas are applicable to LTE standards as well.

Biography

Swades De received his PhD in Electrical Engineering from the State University of New York at Buffalo in 2004. He is currently an associate professor of Electrical Engineering at IIT Delhi, India. His research interests include performance study, resource efficiency in wireless networks, broadband wireless access, and communication and systems issues in optical networks. Dr. De currently serves as an associate editor of IEEE Communications Letters and Springer Photonic Network Communications journal. He is a member of IEEE, IEEE Communications and Computer Societies, and IEICE.

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