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THE CHINESE UNIVERSITY OF HONG KONG
Institute of Network Coding
and
Department of Information Engineering
Seminar

Mutual Dependence of Random Variables

by

Dr. Chung Chan

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Date : 3 November, 2010 (Wednesday)
Time : 2:30 – 3:30 pm
Venue : Room 833, Ho Sin Hang Engineering Building
The Chinese University of Hong Kong

Abstract

This work studies the theory of information through the multiuser secret key agreement problem. A meaningful notion of mutual dependence is established for the secrecy capacity, as a natural generalization of Shannon's mutual information to the multivariate case. Under linear-type source models, this capacity can be achieved practically by linear network codes. In addition to being an unusual application of the network coding solution to a secrecy problem, it gives secrecy capacity an interpretation of network information flow and partition connectivity, further confirming the intuitive meaning of secrecy capacity as mutual dependence. New identities in submodular function optimization and matroid theory are discovered in proving these results.

Biography

Chung Chan is a postdoctoral fellow at the Institute of Network Coding at CUHK. He received B.Sc., M.Eng. and Ph.D. from EECS Department at MIT in 2004, 2005 and 2010 respectively. This work was part of his Ph.D. work on information-theoretic cryptography at the Research Laboratory of Electronics at MIT, and was partly conducted during the time when he was a visiting scholar at the Shun Hing Institute of Advanced Engineering at CUHK in 2010 (Dec 1st – Jun 30th). Chung Chan's research interest is information theory and combinatorics.

**** ALL ARE WELCOME ****

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