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THE CHINESE UNIVERSITY OF HONG KONG

Department of Information Engineering

Seminar

From Entropy to Networks: The Future of Communication Engineering Through the Lens of Network Information Theory

by

Professor Young-Han Kim
University of California, San Diego
U.S.A.

Date : 19 July, 2013 (Friday)
Time : 10:30am - 11:30am
Venue : Room 1009, William M.W. Mong Engineering Building, The Chinese University of Hong Kong

Abstract

Since Shannon's 1948 magna carta of the information age, communication engineers have developed efficient point-to-point codes that achieve the fundamental limits predicted by Shannon. The advent of the Internet and wireless communication, and the ever-increasing appetite for ubiquitous connectivity present a new set of challenges for network communication that involves cooperation and competition among multiple users. Network information theory aims to develop new coding techniques to meet these challenges.

My talk will present a few canonical examples that highlight these challenges -- interference management, network coding, and wireless relaying -- and solutions from network information theory. Throughout, I will discuss what remains to be solved, both in theory and in practice. Looking forward, the problem of network communication in general is far from solved and there are many remaining challenges that require breakthroughs in science and engineering. As the joke goes, LTE may well stand for "long-term employment" for communication engineers.

Biography

Young-Han Kim received his B.S. degree in Electrical Engineering from Seoul National University in 1996 and his Ph.D. degree in Electrical Engineering (M.S. degrees in Statistics and in Electrical Engineering) from Stanford University in 2006. Since then, he has been a faculty member in the Department of Electrical and Computer Engineering at the University of California, San Diego, where he is currently an Associate Professor. During the 2013 Spring semester, he is visiting the Department of Electrical and Computer Enginnering at Seoul National University.

Professor Kim is a recipient of the 1995 General Electric Scholarship, the 2008 NSF CAREER Award, the 2009 US-Israel BSF Bergmann Memorial Award, and the 2012 IEEE Information Theory Paper Award. He is currently serving on the Editorial Board of the IEEE Transactions on Information Theory as an Associate Editor for Shannon Theory. He is a Distinguished Lecturer for the IEEE Information Theory Society for years 2012 and 2013.

**** ALL ARE WELCOME ****

Host: Professor Chandra Nair (Tel: 3943-8467, Email: cnair@ie.cuhk.edu.hk)
Enquiries: Information Engineering Dept., CUHK (Tel.: 3943-8385)