

**Title: Distributed Source Coding: Theory and Applications**

**Speaker:**

Dr. Samuel Cheng  
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**Date:** Monday, 23 May 2011

**Time:** 11:00 am

**Venue:** Room 601J, Chow Yei Ching Building

**Abstract:**

Distributed source coding (DSC) refers to separate compression and joint decompression of mutually correlated sources. One example is compression of multiple correlated sensor outputs that do not communicate with each other and the sensors send their compressed outputs for a centralized joint decoding. Though theoretical foundations were set more than thirty years ago, driven by applications such as wireless sensor networks, video surveillance, and multiview video, DSC has over the past few years become a very active research area with interest from both academia and industry. DSC has strong potentials to enable efficient and low-cost signal processing in sensor networks, to improve current video communication technologies and open the door for many exciting new multimedia applications. However, the impact of DSC is expected to be much broader and cannot be overstated, since the potential of DSC is limitless.

This talk will address theory, code design, and application of DSC, with the following aims: 1) to introduce the theory of DSC and its connections to multimedia signal processing and signal processing for communications, 2) to survey recent advances and exciting progresses made in DSC, and 3) to discuss open challenges and opportunities in both theory and practical DSC designs.

**Biography of the speaker:**

Samuel Cheng received the B.S. degree in Electrical and Electronic Engineering from the University of Hong Kong, and the M.Phil. degree in Physics and the M.S. degree

in Electrical Engineering from Hong Kong University of Science and Technology and the University of Hawaii, Honolulu, respectively. He received the Ph.D. degree in Electrical Engineering from Texas A&M University, College Station, in 2004. He worked in Microsoft Research Asia, Beijing, and Panasonic Technologies Company, New Jersey, in the areas of texture compression and digital watermarking during the summers of 2000 and 2001. In 2004, he joined Advanced Digital Imaging Research, Houston, Texas. Since 2006, he has been with the Department of Electrical and Computer Engineering at the University of Oklahoma, where he is currently an Assistant Professor. He is a co-recipient of the 2006 IEEE Signal Processing Magazine Best Paper Award, which reviews DSC. He has presented (with Dr. Lina Stankovic and Vladimir Stankovic) tutorials on DSC in several major conferences including Eusipco 2008 and ICASSP 2009. His research interests include information theory, image/signal processing, and pattern recognition. He has been awarded five US patents in miscellaneous signal processing areas.

**Organizer:** Dr. Y.C. Wu