



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



**Network Coding for Distributed Storage:
Directions and Open Problems**

by

Prof. Alex Dimakis
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Date : 8 April 2011 (Friday)

Time : 11:00 am - 12:00 pm

**Venue : Room 833, Ho Sin Hang Engineering Building
The Chinese University of Hong Kong**

Abstract

Distributed storage schemes for data centers and peer-to-peer networks often use traditional erasure codes to introduce redundancy for robustness. We will show how network coding can surprisingly reduce the communication required to maintain a storage system compared to standard Reed-Solomon codes used in current architectures. We will present both information theoretic performance bounds and achievable schemes based on novel network codes.

Following recent developments, we will show that interference alignment is fundamental for distributed storage problems and demonstrate equivalence to a low-rank matrix completion problem over a finite field. We discuss several open problems towards the applicability of network coding for cloud storage systems.

Biography

Alex Dimakis is an assistant professor at the Viterbi School of Engineering, University of Southern California. He has been a faculty member in the Department of Electrical Engineering - Systems since 2009. He received his Ph.D. in 2008 and M.S. degree in 2005 in electrical engineering and computer science, both from the University of California, Berkeley. Prior to that, he obtained the Diploma degree in Electrical and Computer Engineering from the National Technical University of Athens in 2003. He received the NSF Career award in 2011, the Eli Jury dissertation award in 2008 and two outstanding paper awards. His research interests include communications, coding theory, signal processing, and networking, with a current focus on distributed storage, network coding, large-scale inference and message passing algorithms.

****ALL ARE WELCOME ****