



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



## FUN Coding: Design and Analysis

by

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**Date : 30 June 2015 (Tuesday)**  
**Time : 2:30 - 3:30pm**  
**Venue: Room 833, Ho Sin Hang Engineering Building**  
**The Chinese University of Hong Kong**

### Abstract

In this talk, I will present a Joint FoUntain coding and Network coding (FUN) approach to information spreading over multi-hop lossy networks. The novelty of our FUN approach lies in combining the best features of fountain coding, intra-session network coding, and cross-next-hop network coding. This talk provides an in-depth examination of FUN codes. First, we theoretically analyze the throughput of FUN codes. Second, we identify several practical issues that may undermine the actual performance, such as buffer overflow, and quantify the resulting throughput degradation. Finally, we propose a systematic design to overcome these issues. Simulation results in TDMA multi-hop networks show that our methods yield near-optimal throughput and are significantly better than fountain codes and existing network coding schemes.

### Biography

Dapeng Oliver Wu received Ph.D. in Electrical and Computer Engineering from Carnegie Mellon University, Pittsburgh, PA, in 2003. Since 2003, he has been on the faculty of Electrical and Computer Engineering Department at University of Florida, Gainesville, FL, where he is currently Professor. His research interests are in the areas of networking, communications, video coding, image processing, computer vision, signal processing, and machine learning. He received University of Florida Research Foundation Professorship Award in 2009, AFOSR Young Investigator Program (YIP) Award in 2009, ONR Young Investigator Program (YIP) Award in 2008, NSF CAREER award in 2007, the IEEE Circuits and Systems for Video Technology (CSVT) Transactions Best Paper Award for Year 2001, the Best Paper Award in Globecom 2011, and the Best Paper Award in QShine 2006. Currently, he serves on the editorial board of IEEE Transactions on Circuits and Systems for Video Technology, IEEE Transactions on Signal and Information Processing over Networks, and IEEE Signal Processing Magazine. He is the founder of IEEE Transactions on Network Science and Engineering. He was the founding Editor-in-Chief of Journal of Advances in Multimedia between 2006 and 2008, and an Associate Editor for IEEE Transactions on Wireless Communications and IEEE Transactions on Vehicular Technology between 2004 and 2007. He has served as General Chair for IEEE GlobalSIP 2015, Technical Program Committee (TPC) Chair for IEEE INFOCOM 2012, and TPC Chair for IEEE International Conference on Communications (ICC 2008), Signal Processing for Communications Symposium. He served as Chair for the Award Committee, Technical Committee on Multimedia Communications, IEEE Communications Society. He is an IEEE Fellow.

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