



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



Practical Random Network Coding for Batched Sparse Codes

by

Dr. Zhiheng ZHOU
Postdoctoral Fellow, Institute of Network Coding
The Chinese University of Hong Kong

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

Abstract

Batched sparse (BATS) codes are a promising technology for multi-hop reliable data transmission. One of the main research topics for BATS is how to design the outer code, i.e. random linear network coding. In this talk, we address this issue by studying the total number of transmissions from an end-to-end perspective, which is an important factor impacting the performance of wireless networks. We characterize the problem as a Mixed Integer Nonlinear Programming (MINLP) problem with the objective of minimizing transmission redundancy, that is, the normalized total number of transmissions. Since MINLP is NP-hard in general, we relax the integer-value constraints and convert it into a nonlinear programming (NLP) problem, of which the solution provides a valid lower bound on the optimal solution of the original MINLP. Finally, a near-optimal approach is designed based on the look-up tables we develop, and it can solve our problem in linear time. Some numerical results are provided for demonstration.

Biography

Zhiheng Zhou received the B.S. degree in communication engineering and Ph.D. degree in communication and information system from University of Electronic Science and Technology of China in 2007 and 2014, respectively. Since October 2015, he has been a Postdoctoral Fellow at the Institute of Network Coding at The Chinese University of Hong Kong. His research interests lie in the areas of wireless and mobile ad hoc networks with emphasis on network coding, reliable and secure network protocols. He also has a strong interest in design and analysis of simulation experiments in real systems.

**** All ARE WELCOME ****