

Network Coding: An Overview

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Abstract: In recent years, network coding has generated much interest in information theory, coding theory, networking, wireless communications, cryptography, and computer science. Consider a point-to-point communication network on which a number of information sources are to be multicast to certain sets of destination nodes. The problem is to characterize the maximum possible throughputs. Contrary to one's intuition, network coding theory reveals that it is in general not optimal to regard the information to be multicast as a "fluid" that can simply be routed or replicated. Rather, by employing coding at the nodes, bandwidth can in general be saved. In this talk, we will give an overview of the recent developments in the field and discuss how they can eventually lead to a new information infrastructure.

Biography: Raymond W. Yeung received the BS, MEng, and PhD degrees in electrical engineering from Cornell University. He joined AT&T Bell Laboratories in 1988. Since 1991, he has been with Department of Information Engineering at The Chinese University of Hong Kong, where he is currently a chair professor. Since 2010, he has also been serving as Co-Director of the Institute of Network Coding at CUHK.

He is a co-founder of the field of Network Coding and received the 2005 IEEE Information Theory Society Paper Award for his work on linear network coding. He also received the Friedrich Wilhelm Bessel Research Award from the Alexander von Humboldt Foundation in 2007 and was

a recipient of the Croucher Senior Research Fellowship for 2000/01. He is the author of the books A First Course in Information Theory (Kluwer Academic/Plenum Publishers, 2002) and Information Theory and Network Coding (Springer 2008).

Professor Yeung was a member of the Board of Governors of the IEEE Information Theory Society from 1999 to 2001. He was the General Chair of the First Workshop on Network, Coding, and Applications (NetCod 2005). He is a Fellow of the IEEE and the Hong Kong Institution of Engineers.

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