**Universal Codes for Slepian-Wolf Distributed Coding Models with Asymptotically Zero Feedback**

by

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Abstract
Distributed coding is a relatively new paradigm for data compression, especially for video compression. Based on the information theoretic characterization established by Slepian and Wolf for near lossless coding and by Wyner and Ziv for lossy coding with side information available only at the decoder, distributed coding has, among other things, the unique feature of shifting the bulk of computation away from the encoder to the decoder. This is in contrast with conventional, nondistributed coding such as MPEG coding and H.26x coding where the encoder is usually much more computationally intensive than the decoder, and thus makes it attractive in applications ranging from mobile camera phones to sensor networks.

The common approach to designing practical Slepian-Wolf distributed codes is to apply some proven channel codes such turbo codes and LDPC codes; the resulting Slepian-Wolf distributed codes are of fixed rate. This talk, however, will present a different approach. Specifically, the talk will present a universal string matching-based (variable rate) coding algorithm for Slepian-Wolf distributed coding models with feedback. The algorithm has a simple progressive encoder. It is shown that for a large class of distributed sources, the forward compression rate (bits per symbol transmitted from the encoder to the decoder) of the algorithm converges to the theoretical limits and the feedback rate (bits per symbol transmitted from the decoder to the encoder) goes to 0 asymptotically. The algorithm is developed jointly by the speaker with Da-ke He, T. Uyematsu, and Raymond Yeung.

Biography
En-hui Yang is now a Professor and Canada Research Chair in the Department of Electrical and Computer Engineering, University of Waterloo, Waterloo, Ontario, Canada. He is the founding director of the Leitch-University of Waterloo multimedia communication lab, and a co-founder of SlipStream Data Inc. From August 2003 to June 2004, he held the position of visiting professor in the Department of Information Engineering, the Chinese University of Hong Kong. His current research interests are: multimedia compression, multimedia watermarking, multimedia transmission, digital communications, information theory, quantum information theory. His research results have been transferred directly into products, which are now used by millions of people worldwide over 40 countries.

**ALL ARE WELCOME**

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