

SIMULTANEOUS SOURCE DECODING AND BLIND EQUALIZATION OF MULTIPATH FADING CHANNELS

In this talk, an introduction will be given to some mathematical tools that have recently been developed for blind equalization of frequency selective fading channels. Standard approaches to the problem are implemented in two steps: First, a channel estimate is obtained, and second, the estimated channel is used to recover the transmitted sequence by means of a zero-forcing or MMSE filter, or using the Viterbi algorithm. The Viterbi algorithm is often too expensive to implement, especially in situations where both the memory of the channel and source coding must be accounted for. We present a new recursive Viterbi-like algorithm that has several advantages over the standard approach. Among these advantages are that the channel estimation, equalization, and sequence estimation are all performed simultaneously. In addition, the resulting criterion does not explicitly depend on the channel estimate (indeed, such an estimate need not be explicitly calculated), and a Viterbi-like trellis can be used for sequence estimation using only the memory induced by the source coding. Some simple simulation examples are included to illustrate the performance of the new algorithm.