Abstract

In this paper, we address Joint Source-Channel (JSC) decoding with low decoding complexity over wireless channel. We propose a unity rate accumulator based design for soft-input soft-out decoding for low complexity Chase-like decoding of arithmetic codes. Chase-like decoding is a low complexity algorithm, where a maximum a posteriori sequence estimation criterion is employed for maximum likelihood decoding of variable length codes like arithmetic codes. Previous contributions propose iterative decoding SISO arithmetic codes with convolutional codes and LDPC codes. We propose application of unity rate accumulator as inner encoder and decoder in the system, which improves the bit error performance of the system by 1.25 dB with same number of decoding iterations. We evaluate the performance of the proposed scheme for image transmission application.

References

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Index Terms

Computer Science

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Keywords

Arithmetic coding
 iterative source-channel coding
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 accumulator

BCJR algorithm