

# ON ITERATIVE SOURCE-CHANNEL IMAGE DECODING WITH MARKOV RANDOM FIELD SOURCE MODELS

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## ABSTRACT

In this paper we propose a novel iterative source-channel decoding approach for robust transmission of compressed still images over noisy communication channels. Besides the explicit redundancy introduced by channel encoding also implicit residual source redundancy is exploited for error protection. The source redundancy is modeled by a Markov random field (MRF) source model, which considers the residual spatial correlation after source encoding. The resulting MRF-based soft-input/soft-output source decoder is used as outer constituent decoder in the proposed iterative sourcechannel decoding scheme, where due to the link between MRFs and the Gibbs distribution, the source decoder can be implemented with very low complexity. We show that this iterative decoding scheme can be successfully employed for recovering the image data, especially when the channel is highly corrupted.