

# **Robust Decoding of Variable-Length Encoded Markov Sources Using a Three-Dimensional Trellis**

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## **ABSTRACT**

In this letter we present an improved index-based a-posteriori probability (APP) decoding approach for the errorresilient transmission of packetized variable-length encoded Markov sources. The proposed algorithm is based on a novel two-dimensional (2-D) state representation which leads to a threedimensional trellis with unique state transitions. APP decoding on this trellis is realized by employing a 2-D version of the BCJR algorithm where all available source statistics can be fully exploited in the source decoder. For an additional use of channel codes the proposed approach leads to an increased errorcorrection performance compared to a one-dimensional state representation.