

A Practical Approach to Polar Codes

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In this paper, we study polar codes from a practical point of view. In particular, we study concatenated polar codes and rate-compatible polar codes. First, we propose a concatenation scheme including polar codes and Low-Density Parity-Check (LDPC) codes. We will show that our proposed scheme outperforms conventional concatenation schemes formed by LDPC and Reed-Solomon (RS) codes. We then study two rate-compatible coding schemes using polar codes. We will see that polar codes can be designed as universally capacity achieving rate-compatible codes over a set of physically degraded channels. We also study the effect of puncturing on polar codes to design rate-compatible codes.

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