Performances of Polar Codes in Steganographic Embedding Impact Minimization

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***Abstract*— Syndrome coding is used in practice by many authors to define steganographic schemes that minimize embedding impact. Polar Codes, recently introduced, are the first capacity-achieving codes with low complexity of encoding and decoding. In this paper we propose a new practical polar coding methodology for constructing steganographic scheme. We use syndrome coding with binary embedding operation. The approach exploits the form of the syndrome, calculated from cover and secret message. A connection between the syndrome decimal value and the embedding changes position is established and enables defining a new steganographic algorithm. The wet paper codes can also be implemented using this method. Experimental results prove that the scheme minimizes the embedding impact with a reduced time complexity compared to the first Polar Coding Steganography (PCS). The bit-reversal permutation matrix used in polar coding is also employed in practice to uniformly scatter the changes over the whole image.**

***Keyword*—Embedding impact, matrix embedding, polar code, steganography, wet paper codes.**

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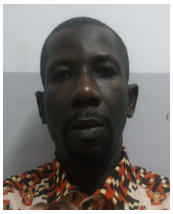

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