عنوان مقاله:

BLIND PARAMETER ESTIMATION OF A RATE k/n CONVOLUTIONAL CODE IN NOISELESS CASE

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خلاصه مقاله:

This paper concerns to blind identification of a convolutional code with desired rate in a noiseless transmission scenario. To the best of our knowledge, blind estimation of convolutional code based on only the received bitstream doesn't lead to a unique solution. Hence, without loss of generality, we will assume that the transmitter employs a non-catastrophic encoder. Moreover, we consider a complete synchronous scenario in which one can extract separate codewords from received sequence. This assumption is valid in many practical communication systems because, the frame preambles allow us to identify the beginning of each codewords.In this paper, we examine the blind identification problem for rate1/n and rate k/n convolutional codes, respectively. For rate 1/n, we propose an iterative method that uses three steps in each iteration to test the validity of a possible value of n. We show that this method can identify the parameters of a rate 1/n convolutional code from only two different noiseless received codewords. Afterwards, we generalize this method for a rate k/n convolutional code in which each iteration is composed of seven successive steps. We show that this method requires at least k+1 different codewords to identify all parameters of a rate k/n code.

کلمات کلیدی:

Blind estimation, convolutional code, cognitive radio, non-catastrophic encoder, minimal-basic encoder

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