

Efficient Coding Schemes for the Hard-Square Model

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Abstract

The hard-square model, also known as the two dimensional $(, \infty)$ -RLL constraint, consists of all binary arrays in which the 1's are isolated both horizontally and vertically. Based on a certain probability measure defined on those arrays, an efficient variable-to-fixed encoder scheme is presented that maps unconstrained binary words into arrays that satisfy the hard-square model. For sufficiently large arrays, the average rate of the encoder approaches a value which is only 0.1% below the capacity of the constraint. A second, fixed-rate encoder is presented whose rate for large arrays is within 1.2% of the capacity value.