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Abstract

Human iris is one of the most reliable biometric because of its uniqueness, stability and noninvasive nature. Thus it has attracted the attention of biometrics based identification and verification research and development community. In this paper, a new approach of iris image feature extraction technique based on the statistical properties of Discrete Cosine Transform (DCT) domain is proposed. A Canny Edge Detection followed by Hough Transform is used to detect the iris boundaries in the eye's digital image. The two level Discrete Wavelet Transformation (DWT) is applied on the segmented and normalized iris region. Both second level horizontal and vertical detail sub-bands are used for encoding unique iris feature. Each of those frequency sub-bands is divided into 8x8 non-overlapping blocks and DCT is applied to each block. Unique iris features are obtained by comparing the energies containing in corresponding DCT blocks of both the sub-bands. These features extracted are used to generate unique encoded binary image and corresponding unique binary bit stream/code is constructed. In order to reduce the size of the database, this binary bit stream instead of binary image is stored in database for matching purpose. Further to increase the security of the system, the bit stream obtained is first encrypted using the user key obtained from user password and then the encrypted bit pattern template is stored. Experimental results on Iris Database reveal that the proposed iris matching scheme provides results comparable to those of recent methods and is also computationally effective.

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Index Terms

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Keywords

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