

PERFORMANCE EVALUATION OF ILLUMINATION NORMALIZATION TECHNIQUES FOR FACE RECOGNITION

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ABSTRACT

Changes in lighting condition impact the appearance of face images to a large extent. Therefore it becomes very difficult to recognize a face under different lighting conditions. The face images have to be normalized to overcome the illumination variation to get recognized. The work presented here analyzes the performance of the illumination normalization methods of face images like DCT (Discrete Cosine Transform) normalization, Wavelet Denoising, Gradient Faces, Local Contrast Enhancement, and Weber's law under different lighting conditions. The face images are preprocessed and normalized by each normalizing method to reduce the effect of illumination. To analyze the performance of each method, the features of these preprocessed images are extracted using Principal Component Analysis (PCA) and the recognition is done based on Euclidean Distance. In this paper, the advantages and drawbacks of each method are analyzed. The recognition rate and computational time of these methods are compared. The Extended Yale B database is used in this work.

KEYWORDS: Discrete Cosine Transform, Gradient Domain, Local Contrast Enhancement, Principal Component Analysis, Wavelet Denoising, Weber's Law