

Assessment of time-lapse in visible and thermal face recognition

Abstract

Although face recognition seems as an easy task for human, automatic face recognition is a much more challenging task due to variations in time, illumination and pose. In this paper, the influence of time-lapse on visible and thermal images is examined. Orthogonal moment invariants are used as a feature extractor to analyze the effect of time-lapse on thermal and visible images and the results are compared with conventional Principal Component Analysis (PCA). A new triangle square ratio criterion is employed instead of Euclidean distance to enhance the performance of nearest neighbor classifier. The results of this study indicate that the ideal feature vectors can be represented with high discrimination power due to the global characteristic of orthogonal moment invariants. Moreover, the effect of time-lapse has been decreasing and enhancing the accuracy of face recognition considerably in comparison with PCA. Furthermore, our experimental results based on moment invariant and triangle square ratio criterion show that the proposed approach achieves on average 13.6% higher in recognition rate than PCA.