Abstract

The facial recognition has been a problem worked on around the world for many persons, the problem has emerged in multiple fields and sciences, especially in computer science and other fields that are very interested in this technology are robotic, criminalist etc. Unfortunately, many reported face recognition techniques rely on the size and representative of training set such as e-passport, law enforcement and id- card identification, and most of them will suffer serious performance drop if only one training sample per person is available to the systems [1]. In a face image, only a part of face is changed due to pose, illumination and other source of changes. In this paper, a novel face recognition detection approach known as Gabor wavelet based PCA approach is presented based on fusing global and local features of image. To extract global and local features, Gabor wavelet filter are applied on the whole image and non-overlapping sub-images with equal size. To reduce the dimension of new fused feature vector and to better characterize the similarity between each gallery face and the probe image set, Principal Component Analysis (PCA) is employed. And finally, measure the similarity between the images by using the Euclidean distance as classifier. The Experimental results shows that proposed
Face Recognition and Detection through Similarity Measurements

technique improves the efficiency of face recognition under varying illumination, expression and
variation in poses of face images by using standard databases when compared to traditional
PCA and Conventional method such as global Gabor faces recognition. In this paper, the
proposed algorithm is tested on the public and largely used ORL database.

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**Index Terms**

Computer Science Image Processing

**Keywords**

Face recognition, Face detection, PCA, Eigenfaces, Gabor Wavelet, Gabor faces, Dimensionality reduction.