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 relay 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.

References

9. M. Zhou and H.Wei, “Face verification using Gabor wavelets and Adaboost”.
10. L. Shen and L. Bai,"Gabor feature based face recognition using kernel methods”.


46. S. Lawrence, C. L. Giles, A. C. Tsoi, and A. D. Back, "Face Recognition: A Convolutional Neural Network Approach," IEEE Transactions on Neural Networks, Special Issue on Neural Networks and Pattern Recognition, pp.1-24, 1997


53. A. Howell and H. Buxton, "Towards unconstrained face recognition from image


2003. doi: 10.1109/TPAMI.2003.1201822
72. Cascade Classification — OpenCV 2.4.13.3 documentation http://docs.opencv.org/modules/objdetect/doc/cascade-classification.html
73. DATABASES http://www.face-rec.org/databases

Index Terms

Computer Science Image Processing

Keywords

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