An Efficient Method for Face Feature Extraction and Recognition based on Contourlet Transform and Principal Component Analysis using Neural Network

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Abstract

In this paper, an efficient face recognition method based on discrete Contourlet transform using PCA and Neural Network classifier is proposed. Each face from the Face Dataset is decomposed using the Discrete Contourlet transform. The Contourlet coefficients of low frequency & high frequency in different scales & various angles are obtained. The frequency coefficients are used as a feature vector for further process. The PCA (Principal component analysis) is used to reduce the dimensionality of the feature vector. The reduced feature vector is used for learning phase of Neural Network classifier. The test databases are projected on Contourlet-PCA subspace to retrieve reduced coefficients. These coefficients are used to match the feature vector coefficients of training dataset using Neural Network Classifier and the results are compared with Euclidean Distance Classifier. The experiments are carried out using Face94 and IIT_Kanpur database.
Reference

- Dr Libor Spacek Computer Vision Science Research Projects,Face94Dataset http://dces.essex.ac.uk /mv/allfaces / faces94.zip

**Index Terms**

Computer Science  
Pattern Recognition

**Key words**

Discrete Contourlet Transform  
Euclidean Distance

Principal Component Analysis  
Feature Extraction  
Neural Network