

## عنوان مقاله:

Using Hybrid of Eigenface and Imperialist Competition Algorithm for Feature Selection in Face Recognition

## محل انتشار:

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## خلاصه مقاله:

Design of a robust Face Recognition (FR) system is greatly affected due to varying illumination and pose conditions. The accuracy of FR system can be increased by normalizing and compensating the illumination variations in the pre-processing stage. To improve the robustness of FR systems against illumination variations, a method is proposed in this study which is based on Contourlet Transform (CT), hybrid of Principal Component Analysis (PCA) and Imperialist Competition Algorithm (ICA) techniques for feature reduction, and an ICA-optimized Multi-Layer Perceptron (MLP) classifier. First, each face is decomposed using the CT. So, the contourlet coefficients of low and high frequency in different scales and various angles are obtained. The frequency coefficients are employed as a feature vector for further processing. The PCA is then used to reduce the dimensionality of the feature vector. The ICA is also exploited to search the feature space for an optimal feature subset. Then, the reduced-size feature vector is applied to the face classifier that is based on MLP neural network whose structure and learning rate are optimized by ICA. The proposed method is robust to variation of imaging conditions and pose variations. The proposed technique provides better results when tested on ORL and Extended Yale-B databases as compared with other existing techniques such as hybrid model based on discrete wavelet transform and PCA (in terms of precision, sensitivity, and accuracy) and different state-of-the-art methods.

## کلمات کلیدی:

face recognition, contourlet transform, principal component analysis, imperialist competition algorithm, multi-layer perceptron

## لینک ثابت مقاله در پایگاه سیویلیکا:

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