عنوان مقاله:

A New Neural Network Approach for Face Recognition based on Conjugate Gradient Algorithms and Principal Component Analysis

نویسندگان:

Hamed Azami - *Department of Electrical Engineering, Iran University of Science and Technology,*

Milad Malekzadeh - *Department of Electrical and Computer Engineering, Babol Industrial University,*

Saeid Sanei - *Faculty of Engineering and Physical Sciences, University of Surrey,*

خلاصه مقاله:

This paper presents a new approach based on conjugate gradient algorithms (CGAs) and principal component analysis (PCA) for face recognition. First, images are decomposed into a set of time-frequency coefficients using discrete wavelet transform (DWT). Basic back propagation (BP) is a well established technique in training a neural network. However, since in this algorithm the steepest descent direction is not the quickest convergence, it is slow for many practical problems and in many cases including face recognition, its performance is not satisfactory. To overcome this problem, four algorithms, namely, Fletcher-Reeves CGA, Polak-Ribikre CGA, Powell-Beale CGA, and scaled CGA have been proposed. Also, in this paper the PCA as a pre-processing step to create the uncorrelated and distinct features of the DWT of images is used. The simulation results show that all of the proposed methods, compared with the basic BP, have greater accuracies

کلمات کلیدی:

Face recognition, discrete wavelet transform, conjugate gradient algorithm, and principal component analysis

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https://civilica.com/doc/187714