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REVIEW OF FACE RECOGNITION SYSTEM USING MATLAB

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ABSTRACT: In this paper, a system is designed to recognize the face. Face is recognized after being requested from biometrics and has various uses in modern life. Various algorithms are used by different application, regardless of biometrics such as video compression, indexing etc. An effective face recognition system can be very useful for forensic, law enforcement, security systems, authentication and priority access to authorized users. In this review, a face recognition system is based on the principal component analysis (PCA) and the feed forward neural network. The normal face recognition systems were developed earlier, we are developing a system consisting of two phases which are the PCA pre-processing phase, and the neural network classification phase. The proposed PCA and neural network based identification system provides improvement on the recognition rates, when compared with a face classifier based on the PCA and Euclidean Distance.
Keywords: Face Recognition, PCA, ICA, SVM, Image Restoratio, Image Processing.

I. HISTORY OF FACE RECOGNITION

The subject of face recognition is as old as computer vision. Face recognition has always remain a major focus of research because of its non invasive nature and because it is people's primary method of person identification.

Kohonen, who demonstrated that a simple neural net could perform face recognition for aligned and normalized face images. Many researchers tried face recognition schemes based on edges, inter feature distance and other neural net approaches. Kirby and Sirovich (1989) later introduced an algebraic manipulation which made it easy to directly calculate the eigen faces. Turk and Peutland (1991) then demonstrated that the residual error when coding using the eigen faces could be used both to detect faces in cluttered natural imagery, and to determine the precise location and scale of faces in an image. They then demonstrated that by coupling this method for detecting and localizing faces with the eigen face recognition method, one could achieve reliable, real-time recognition of faces in an minimally constrained environment.

II. INTRODUCTION

System for face recognition is consisted of two parts: hardware and software. This system is used for automatic recognition users or confirmation of password. System must to recognize where is face on some picture, to take it from picture and to do verification. Face has about 80 characteristic parameters some of them are- width of nose, jaw width, high of eyehole, space between eyes, shape of the zygotic bone. A rationally connected neural network examines small windows of an image, and decides whether each window contains a face.

III. RELATED WORK

Alaa Eleyan ey al (2005) had analyzed that face recognition is one of the most important image processing research topics which is widely used in personal identification, verification and security applications.

In this paper, a face recognition system, based on the principal component analysis (PCA) and the feed forward neural network is developed. The system consists of two phases which are the PCA processing phase, and the neural network classification phase. Jawad Negi ey al (2008) recognized that automatic recognition of people is a challenging problem which has received much attention during recent years due to its vast use in applications. Face recognition is one of these challenging problems and up to date, there is no technique that provides a robust solution to all situation. Shamla Mantri ey al (2011) proposed to label a self-organizing map (SOM) to measure image similarity. To manage this goal, the author feed facial images associated to the regions of interest into the neural network. At the end of the learning step, each neural unit is tuned to a particular facial image prototype. Mohammod Abul Kashem et al (2011) investigated that face recognition has received substantial attention from researches in biometrics, pattern recognition field and computer vision communities. Face recognition can be applied in security measure at airports, passport verification, criminals list verification in police department, visa processing, verification of electoral identification and card security measure at ATM's. In this research, a face recognition system for personal identification and verification using PCA (Principal Component Analysis) with Back Propagation Neural Network (BPNN) is proposed. This research describes a fast face detection algorithm with accurate result.

Lip Tracking is one of the biometric systems based on which a genuine system can be developed. The facial characteristics of an individual are unique and difficult to imitate, lip tracking holds an advantage of making the system secure. Navneet Jindal et al (2013) give an idea of face detection from a long database of face images with different backgrounds is not an easy task. Cunjian Chan et al (2013) analyzed that the facial makeup has the ability to alter the appearance of a person. Such an alteration can degrade the accuracy of automated face recognition systems, as well as that of methods estimating age and beauty from faces.

IV. ALOGORITHMS

The LFA method analyzes the face in terms of local profiles such as eyes, nose etc called LFA beads. The LFA technique provides better durability for local changes in facial images in the matching procedure but does not represent global facial feature.

SVM(Super Vector Machine):

The SVM (Supper Vector Machine) was applied to face detection by Guo et al on a large YGA database with 8000 images. Guo et al, choose the SVM's as a representative classifier, and the SVR as a representative regressor and compared their performance using the same input data. From their experiment, the SVM's perform much better than the SVR on the YGA database (5.55 versus 7.00), and 5.52 versus 7.47 years, for females and males respectively.
SVM are one of the most useful techniques in classification problems. SVM cannot be applied when the feature vectors defining samples have missing entries. The advantage of SVM classifier over traditional neural network is that SVM's can achieve better generalization performance.

ICA(Independent Component Analysis):-
Independent Component analysis (ICA) is a method for finding underlying factors or component from multidimensional statistical data.
There is need to implement face recognition system using ICA for facial images having face orientations and different illumination conditions, which will give better results as compared with existing
systems. ICA looks for components that are both statistically independent and non Gaussian.

LDA(Linear Discriminant Analysis):-
Linear Discriminant Analysis (LDA) is a powerful method for face recognition. It yields an effective representative that linearly transforms the original data space into a law dimensional feature spaces where the data is well separated.
A subspace analysis method for face recognition called Kernal discriminant locality preserving projections (MMDLPP) was proposed in based on the analysis of LDA, LPP and Kernal functions.

V. CONCLUSION

This paper has attempted to review a significant number of papers to cover the recent development in the field of face recognition. Present study that for enhanced face recognition new algorithm has to evolve using hybrid methods of soft computing tools such as Artificial Neural Network (ANN), SVM, SOM may yields better performance. By combining two or more Teckins, the accuracy of the systems can be greatly improved.

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