Automated Multi Face Identification

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Abstract

Face Identication is a fast growing and interesting area in real time application. Large Number of face identification have been developed in last decades. In this paper review of Automated Multiface Identification using many methods. Automated mutliface identification is Identifying the multi face by name. This review exmine all methods like it poses, facial expression and identify face. To identify any face we must have record the photo. We save photo in datebase. to identify we record that Generally contain name and photo. Multiface identification identify form multiface to one face that store in database.

I. INTRODUCTION

Automated multiface identification (AMFI) is important part of the capability of human perception. The computational model not only contribute to theoretical insights but also to many practical applications like automated crowd, access control, design of human computer interface, content based image database management, criminal identification and so on. Automated multi face identification(AMFI) has derive as an attractive solution to address many contemporary needs for identification and the verification of identity faces. It brings together the promise of other biometric systems, which attempt to tie identity to individually distinctive features of the body. This report develops a socio-political analysis that bridges the technical and social-scientific literatures on AMFI and addresses the unique challenges and concerns that attend its development, evaluation, and specific operational uses, contexts, and goals. It highlights the potential and limitations of the technology, nothing those tasks for which it seems ready for deployment, those areas where performance obstacles may be overcome by future technological developments or sound operating procedures, and still other issues which appear intractable. Its concern with efficacy extends to ethical considerations. For the purposes of this summary, the main findings and recommendations of the report are broken down into three parts: first one is performance, second is evaluation, third is operation,

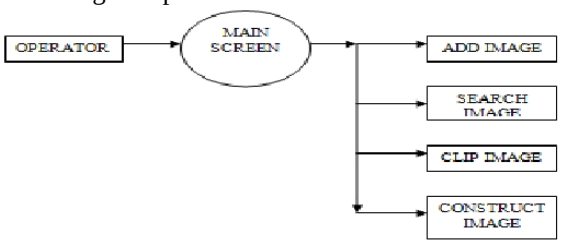
II. FACE RECOGNITION ALGORITHMS

Principal Component Analysis (PCA)

PCA also known as Karhunen-Loeve method. IT is famous methods for feature selection and dimension reduction. The identification method, known as Eigen face method. It defines a feature space which reduces the dimensionality of the original data space. This reduced data space is used for identification. But poor critical power within the class and large computation are the well known common problems in PCA method. This limitation is overcome by Linear critical Analysis (LDA). LDA is the most superior algorithms for feature selection in appearance based methods . But many LDA based face identification system we first used PCA to reduce dimensions and LDA is used to maximize the critical power of feature selection. The reason is that LDA has the small sample size problem in which dataset selected should have larger samples per class for good discriminating features extraction. Thus implementing LDA directly resulted in poor extraction of discriminating features. In the proposed method Gabor filter is used to filter frontal face images and PCA is used to reduce the dimension of filtered feature vectors and then LDA is used for feature extraction. The performances of appearance based statistical methods such as PCA, LDA and ICA are tested and compared for the recognition of colour faces images. In Multi face identification the database save gray face.PCA is better than LDA and ICA under different illumination variations but LDA is better than ICA. LDA is better than PCA and ICA on partial occlusions, but PCA is less sensitive to partial occlusions compared to LDA and ICA. PCA is used as a dimension reduction technique and for modelling expression deformations . A recursive algorithm for calculating the critical features of PCA-LDA procedure is introduced in . This method concentrates on challenging issue of computing discriminating vectors from an incrementally arriving high dimensional data stream without computing the corresponding covariance matrix and without knowing the data in advance. The main proposed incremental PCA and LDA algorithm is "very efficient in memory usage" and it is very efficient in the calculation of first basis vectors. This algorithm gives an acceptable face identification success rate in comparison with very famous face recognition algorithms as PCA and LDA. Two basic–based techniques such as Modified PCA (MPCA) and Locality Preserving Projections (LPP) .LLP are combined to give a high face identification rate. PCA is used as a feature extraction technique. This method shows a better performance in comparison with the well known methods in distance varying environments. PCA can outperform over many other techniques when the size of database is small. In proposed algorithm the database was sub grouped using some features of interest in faces. Only one of

the obtained subgroups was provided by PCA for recognition. Despite the good results of PCA, this technique has the disadvantage of being computationally expensive and complex with the increase in database size, since all the pixels in the image are necessary to obtain the representation used to match the input image with all others in the database. Different dimensionality reduction techniques such as PCA, Kernel PCA, LDA, Locality preserving Projections and Neighbourhoods Preserving embedding were selected and applied in order to reduce the loss of classification performance due to changes in facial appearance. The performance of recognition while using PCA as well as LDA for dimensionality reduction seems to be equal in terms of accuracy. But it was observed that LDA requires very long time for processing more number of multiple face images even for small databases. In case of Locality Preserving Projections (LPP) and NPE methods, the recognition rate was very less if increasing number of face images were used as compared to that of PCA and KPCA methods. The proposed method provided considerable improvements in the case of illumination variations, PCA and kernel PCA are the best performers. Modified PCA algorithm for face recognition were proposed, this method was based on the idea of reducing the influence of eigenvectors associated with the large eigen values by normalizing the feature vector element by its corresponding standard deviation. The simulation results show that the proposed method results in a better performance than conventional PCA and LDA approaches and the computational cost remains the same as that of PCA and much less than that of LDA. A new face recognition method based on PCA, LDA and neural network were proposed. This method consists of four steps: i) Pre-processing ii) Dimension reduction using PCA iii) feature extraction using LDA and iv)Classification using neural network. Combination of PCA and LDA were used for improving the capability of LDA when a few samples of images were available and neural classifier was used to reduce number misclassification caused by not-linearly separable classes. The proposed method was tested on Yale face database. Experimental results on this database demonstrated the effectiveness of the proposed method for face recognition with less misclassification in comparison with previous methods. A different approach for face detection was proposed which minimizes computation time while achieving higher detection accuracy. PCA was used to reduce the dimension extracting a feature vector. GRNN used as a function approximation network to detect whether the input image contains a face or not and if existed then reports about its orientation. The proposed system had shown that GRNN can perform better than back propagation algorithm and give some solution for better regularization. B. Support Vector Machine (SVM) Support Vector Machines (SVM) are one of the most useful techniques in classification problems. One clear example is face recognition. However, SVM cannot be applied when the feature vectors defining samples have missing entries. A classification algorithm that has successfully been used in this framework is the all-known Support Vector Machines (SVM), which can be applied to the original appearance space or a subspace of it obtained after applying a feature extraction method. The advantage of SVM classifier over traditional neural network is that SVMs can achieve better generalization performance. C. Independent Component Analysis (ICA) Independent component analysis (ICA) is a method for finding underlying factors or components from multivariate (multidimensional) statistical data.

Artificial Neural Network (ANN):- Multi-Layer Perception (MLP) with a feed forward learning algorithms was chosen for the proposed system because of its simplicity and its capability in supervised pattern matching. It has been successfully applied to many pattern classification problems . A new approach to face detection with Gabor wavelets & feed forward neural network was presented. The method used Gabor wavelet transform and feed forward neural network for both finding feature points and extracting feature vectors. The experimental results, have shown that proposed method achieves better results compared to the graph matching and eigen faces methods, which are known to be the most successful algorithms. A new class of conventional neural network was proposed where the processing cells are shunting inhibitory neurons. Previously shunting inhibitory neurons have been used in a conventional feed forward architecture for classification and non-linear regression and were shown to be more powerful than MLPs. They can approximate complex decision surfaces much more readily than MLPs. A hybrid neural network solution was presented which combines local image sampling, a self-organizing map neural network, and a conventional neural network. The self organizing map provides a quantization of the image samples into a topological space where inputs that are nearby in the original space are also.



III.MULTI FACE IDENTIFICATION USES

- Security: Today to identify face to many faces is little difficult. To identify multi face to one faced by multi face identification system. Today more than ever, security is a primary concern at airports and for airline staff office and passengers. Airport protection systems that use

face identification technology have been implemented at many airports around the world. The following examples. Anyone recognized by the system would have further investigative processes by public safety officers. Computer security has also seen the application of face recognition technology. To prevent someone else from changing files or transacting with others when the authorized individual leaves the computer terminal for a short time, users are continuously authenticated, checking that the individual in front of the computer screen or at a user is the same authorized person who logged in.

- Surveillance: Like security applications in public places, surveillance by face identification systems has a low user satisfaction level, if not lower. Free lighting conditions, face orientations and other divisors all make the deployment of face recognition systems for large scale surveillance a challenging task. The following are some example of face based surveillance. The city council claims that the technology has helped to achieve a 34% drop in crime since its facility. Similar systems are in place in Birmingham, England.

REFERENCES

[1] Issam Dagher, Incremental PCA-LDA algorithm‖, International Journal of Biometrics and Bioinformatics (IJBB), Volume (4): Issue (2).

[2] J. Shermina,V. Vasudevan,An Efficient Face recognition System Based on Fusion of MPCA and LPP, American Journal of Scientific Research ISSN 1450-223X Issue 11(2010), pp.6-19

[3] Ishwar S. Jadhav, V. T. Gaikwad, Gajanan U. Patil, Human Identification Using Face and Voice Recognition‖, International Journal of Computer Science and Information Technologies, Vol. 2 (3), 2011.

[4] Yun-Hee Han,Keun-Chang Kwak, Face Recognition and Representation by Tensor-based MPCA Approach, 2010 The 3rd International Conference on Machine Vision (ICMV 2010)

[5] Neerja,Ekta Walia, Face Recognition Using Improved Fast PCA Algorithm, Proceedings of IEEE 2008

[6] S.Sakthivel, Dr.R.Lakshmipathi, Enhancing Face Recognition using Improved Dimensionality Reduction and feature extraction Algorithms_An Evaluation with ORL database, International Journal of Engineering Science and Technology Vol. 2(6), 2010

[7] Lin Luo, M.N.S. Swamy, Eugene I. Plotkin, ―A Modified PCA algorithm for face recognition, Proceedings of IEEE 2003

[8] A. Hossein Sahoolizadeh, B. Zargham Heidari, and C. Hamid Dehghani, A New Face Recognition Method using PCA, LDA and Neural Network, International Journal of Electrical and Electronics Engineering 2:8 2008

[9] Feroz Ahmed Siddiky, Mohammed Shamsul Alam,Tanveer Ahsan and Mohammed Saifur Rahim,‖An Efficient Approach to Rotation Invariant Face detection using PCA,Generalized Regression Neural network and Mahalanobis Distance by reducing Search space, Proceedings Of IEEE 2007

[10] Vapnik. Statistical Learning Theory. JohnWiley and Sons, New York, 1998.

[11] E. Osuna, R. Freund, and F. Girosit. Training support vector machines: an application to face detection. Proc. of CVPR, pages 130–136, 1997.

[12] B. Heisele, T. Serre, and T. Poggio. A component based framework for face detection and identification. IJCV, 74(2):167–181, 2007.

[13] Q. Tao, D. Chu, and J. Wang. Recursive support vector machines for dimensionality reduction. IEEE Trans. NN, 19(1):189–193, 2008.

[14] Marian Stewart Bartlett, Javier R. Movellan, Terrence J. Sejonowski, ―Face Recognition by Independent Component Analysis, IEEE Transactions on Neural Networks, vol-13, No- 6,November 2002, PP 1450- 1464.

[15] Pong C.Yuen, J.H.Lai, ―Face representation using independent component analysis, Pattern Recognition 35 (2002) 1247-1257.

[16] Tae-Kyun Kim, Hyunwoo Kim, Wonjum Hwang, Josef Kittler, ―Independent component analysis in a local facial residue space for face recognition, Pattern Recognition 37 (2004) 1873-1885