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SMART ATTENDANCE SYSTEM USING FACE DETECTION TECHNIQUES

Tejas Atkire [1], Dnyaneshwar Birajdar [2], Nilesh Pimparwar[3]Aparna Lavangade[4]

[1]*Computer Department, PuneUniversity, India*
[2]*Computer Department, PuneUniversity, India*
[3]*Computer Department, PuneUniversity, India*

Abstract*: —this paper is about the smart attendance management system using face detection techniques. Daily attendance marking is a common and important activity in schools and colleges for checking the performance of students. Manual Attendance maintaining is difficult process, especially for large group of students. Some automated systems developed to overcome these difficulties, have drawbacks like cost, fake attendance, accuracy, intrusiveness. To overcome these drawbacks, there is need of smart and automated attendance system. We are implementing attendance system using face recognition. Since face is unique identity of person, the issue of fake attendance and proxies can be solved. The system uses local binary pattern face recognition technique as it is fast, simple and has greater success rate. Also, it has pro-vision to deal with intensity of light problem and head pose problem which makes it effective. This smart system can be an effective way to maintain the An will-less squatter recognition system is proposed based on appearance-based features that focus on the unshortened squatter image rather than local facial features. The first step in squatter recognition system is squatter detection Viola-Jones squatter detection method that capable of processing images extremely while achieving upper detection rates is used. The whole squatter recognition process can be divided into two parts squatter detection and squatter identification. For face detection part, Viola Jones face detection method has been used out of several face detection methods. After face detection, face is cropped from the actual image to remove the background. Eigen faces and fisher faces methods have been used for face identification part. Average images of subjects have been used as training set to improve the accuracy of identification.*

Keywords*—Face Recognition, Face Detection, Eigen face, , Facial feature, Face identification, Training set.*

I. INTRODUCTION

Maintaining attendance is compulsory and important in all the institutions for knowing the performance of students. This attendance constitutes a major role for students because based on these students get their final grade by the end of their semester for these the students attend their classes without any fail. This is the main factor in improving the education standard. So for these reasons the teacher has to mark the attendance carefully without making any wrong attendance and before completing taking of attendance should make sure whether marked attendance correctly .this is also a time waste process for teachers because of taking attendance manually. But it is very difficult when there is more number of students. So different colleges so follow different methods and some take attend dance by using files and some others take attendance by using biometric systems. Other method that is used is by manually signing of students on papers. Whenever they are attending the classes this takes much tie for finding their names on the sheet and there may be chance they may lost the sheet. Many automatic methods are available and one of them is the biometric attendance. This method is not good because it waste the student's time by standing in the queue to give their thumb impression on the system. This method ripened for identifying of the individuals. This method examines the behavioural features and the physiological of the individuals based on plastic cards, pins and tokens to identify the person. This method includes identification because of the physiological features such as finger prints, face, hand veins, iris and had geometry and features such as keystroke dynamics and the signature are used as the behavioral features. All the institutions follow these attendance systems to keep a record of the students and also to know in which department they are studied. This method is good benefit for the parents because the colleges will send the information student attendance to their parents through mail or system and there is also a chance that the student may delete the mail before their parents can see but with this method they will be having soft copy of image and can be directly sent to the parents personal mail. The first system that is successful is based on the pattern matching applied to the facial features providing a compressed face picture.

II. Literature survey for face recognition algorithms

2 .1 Eigen face technique

This process is used for completing reduction in the dimensionality. This algorithm is frequently used for the recognition of faces. This detection and face recognition uses the principal component study. Eigen face acts as a core component for dividing of face into separate feature vector. Covariance matrix used for finding the data from the article vector. The faces are differentiated by using the highest Eigen values. The image having a face is then measured as grouping of Eigen expressions. The difference among faces is then measured using that of the Eigen vectors. Face space is defined as the top M Eigen faces that match with the outline of M dimensional space.

Association and training data has a much relation between them. By the authors to expertly symbolize photographs of the faces. By recreating a image by using collecting small loads for every image and progress image as good face snapshot. Eigen picture helps to obtain the weights of each face. The Eigen face method is widely used because of its implementation and algorithm that makes the face recognition easy. This is good for storage and time of handling is also good. Eigen face has correctness and it depends on many things. The image can be minimized to the dimension size in short period of time can be done by PCA. The result that is satisfactory can be achieved by image pre-processing. The Eigenface method makes the system work very and we can tell that it is the main advantage .more time is consumed for both Eigen values and the Eigen vectors. This Eigen face is not suitable for location and lightening conditions

2.2 Fisher face approach

Fisher faces the most widely and effectively used methods for recognition of faces. This method depends on the method of appearance. It one of successful methods that are used for face recognition procedure Belhumer et al. authenticated the method called LDA. This LDA method used for the finding of set of centre images that maximizes the ratio of the outside the class scatter and within the class scatter. This method has some drawbacks that the session the distribute medium will be perpetually alone ever since pixels of number image more than that pictures that are maximized for detection error rate so that if any alteration is posed and brightness if there Many algorithms have been proposed to overcome the whilom drawbacks. Belhumeur et al. have designated fisher squatter method for squatter recognition by practising the linear discriminant wringer and principal component wringer that lead to the subspace projection matrix same as that of the Eigen face method. This fisher squatter method has the advantages of by taking sectional undertow data and by falling dissimilarity surrounded by undertow and then exploit the matriculation separation. In this fisher face method N * M images are composed and then reformed into (N *M)*1 vector.one can set to categorize the training data compact changed persons and their different pictures. The dimension of projection of the face space is not that much compared to Eigen face that results in more handling time for recognition and then large storage for face.

2.3 Local Binary Pattern (LBP)

There exist several methods for extracting the most useful features from (preprocessed) squatter images to perform squatter recognition. One of these feature extraction methods is the Local Binary Pattern (LBP) there exist several methods for extracting the most useful features from (preprocessed) squatter images to perform squatter recognition. One of these full-length extraction methods is the Local Binary Pattern (LBP) method. This relative new tideway was introduced in 1996 by Ojala et al. It is possible with LBP to describe the texture and shape of a digital image This is washed-up by dividing an image into several small regions from which the features are extracted these features consist of binary patterns that describe the surroundings of pixels in the regions. The obtained features from the regions are concatenated into a single full-length histogram, which forms a representation of the image.The obtained features from the regions are concatenated into a single full-length histogram, which forms a representation of the image. Images can then be compared by measuring the similarity (distance) between their histograms. By studies we can say that using squatter recognition the LBP method provides largest results, both in terms of speed and favoritism performant To implement the squatter recognition in this research work, we proposed the Local Binary patterns methodologic. Images can then be compared by measuring the similarity (distance) between their histograms. By studies we can say that using face recognition the LBP method provides better results, both in terms of speed and discrimination performant To implement the face recognition in this research work, we proposed the Local Binary patterns methodologic. Because of the way the texture and shape of images is described, the method seems to be quite robust versus squatter images with variegated facial expressions,variegated lightening conditions, image rotation and white Haired of persons.

III. Face Recognition Algorithm

To put into use the face recognition in this research work, we proposed the Local Binary patterns way(s) of doing things. Local Binary Pattern works on local features that uses LBP operator which summarizes the local special structure of a squatter image. LBP is specified as an orders set of binary comparisons of pixels strengths/levels between the part-way pixels and its eight surrounding pixels. Local Binary Pattern do this comparison by applying the pursuit formula: LBP (xc,yc) = ?7n=0 S(in-ic)2n Where ic corresponds to the value of the part-way pixel (xc,yc), into the value of eight surrounding pixels. It is used to tenancy the local features in the squatter and moreover works by using vital LBP operator. Local Binary Pattern do this comparison by applying the following formula:

$$LBP\ (x_c,y_c) = \Sigma^{7}_{n=0}\ S(i_n-i_c)2^n$$

Where i_c corresponds to the value of the center pixel (x_c,y_c), into the value of eight surrounding pixels. It is used to control the local features in the face and also works by using basic LBP operator. Feature extracted matrix originally of size 3 x 3, the values are compared by the value of the part-way pixel, then binary pattern lawmaking is produced and moreover LBP lawmaking is obtained by converting the binary lawmaking into decimal The Squatter Recognition Algorithm Input: Training Image set Output: the face image is compared with center pixel of image and recognition with unknown face image.

1. Initialize temp = 0
2. FOR each image I in the training image set
3. Initialize the pattern histogram, H = 0
4. FOR each center pixel $t_c \epsilon$ I
5. Calculate the pattern label of t_c, LBP (1)
6. Increase the corresponding bin by 1.
7. END FOR
8. Find the highest LBP feature for each face image and combined into single vector.
9. Compare with test face image
10. If it match it most similar face in database then successfully recognized.

IV. Block Diagram of proposed system

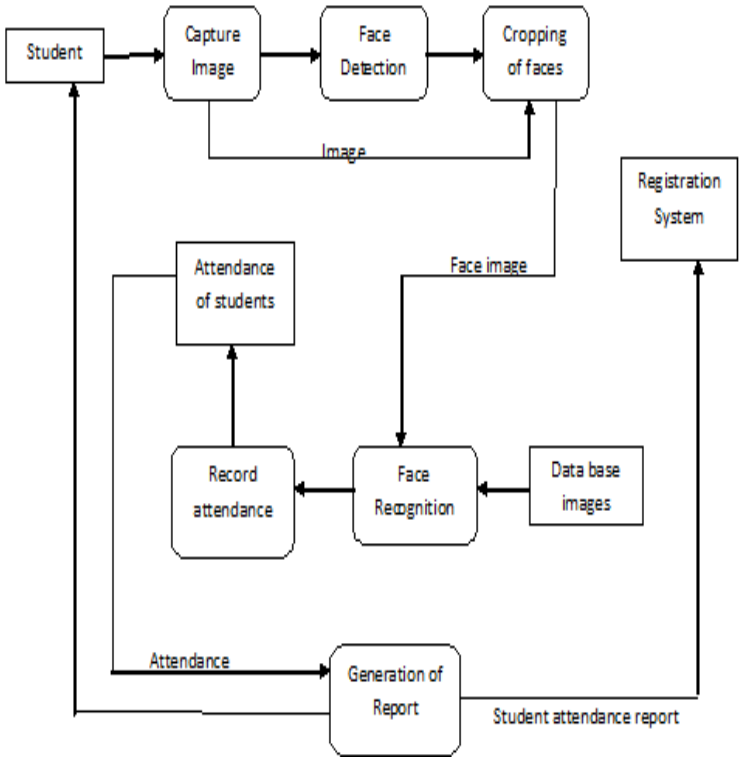

Fig. block diagram of proposed system

V. Implementation of the system

Face recognition is a very tough problem since an unknown face image seen in the extraction phase is usually different from the face image seen in the classification phase. Although local binary features has been extracted from the squatter image for squatter recognition that there are several squatter image uses in the database that compared with the input squatter image. The face image depends on viewing lighting and environmental conditions. In addition the face image changes according to the expressions. In the research work, which is flexible and efficient.

VI. Result

This implementation is used to test the performance of the LBP-method on different kind of face images. Several parameters, like the LBP operator (P and R), non-weighted or weighted regions and the dividing of the regions, are varied to see the influence of these parameters on the performance. For this experiment we have collected lots of face images and also collected face images from the face database. In the proposed algorithm, different types of face images have been recognized.

VII. Conclusion

In this research has been done to the performance of a face recognition system by making use of feature extraction with Local Binary Patterns. It mainly consists of three parts, namely squatter representation, full-length extraction and classification. Squatter representation represents how to model a squatter and determines the successive algorithms of useful and unique features of the squatter image are extracted in the full-length extraction phase. In the nomenclature the squatter image is compared with the images from the database. In the classification the face image is compared with the images from the database. The method represents the local feature of the face and matches it with the most similar face image in database. The accuracy of the system is above 100% by using Local Binary Patterns algorithm.

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