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PYTHON Based Attendance System

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Abstract: The facial identification and recognition have a major demand in technical field mainly in the field of security purpose. Face identification and recognition is the important field for verification purpose especially in the case of attendance system. Maintaining the attendance is very important in all the institutes for checking the presence of students. Every Schools and Colleges has its own method in this regard. Some Schools and Colleges are taking attendance manually using the traditional pen and paper or file based approach. The system has developed a lot for deploying an easy way and a secured manner of taking down the attendance. The system has first captures an image of all the students and stores the information into database. The system it stores more number of the image into a face coordinates structures. Next time whenever the registered student enters the premises the system recognizes the student and marks his attendance along with the time.
Keywords: Face Detection and Recognition, Database, Attendance.

I. INTRODUCTION

Schools and colleges all maintain attendance to record when student or employees in time and out time. Some Schools and colleges keeps full records of attendance registers like who are coming in time and who are coming late. An attendance system provides many benefits to Schools and colleges. Normal process for attendance is professor/attender calls student names & records attendance. It takes some time to record attendance. Suppose duration of class of one subject is about 50 minutes & to record attendance takes 5 to 10 minutes. For each lecture this is wastage of time. To maintain accurate attendance system , we need to use automatic process which is based on python using laptop as module.In this approach, we are using face detection & face recognition system. This face Identification differentiates faces from non-faces and that is must for accurate attendance. The new technology involves the face detection and identifying for marking the students attendance. The laptop is used for face identification & recognition. For laptop a camera module is connected . The database is collected. The database includes names of the person, their images . The unique features of our brain is that it can think only in images not in words. God has given everyone a unique face. Face is the most important part of our body, so that it can reflect many emotions . There are traditional ways are being utilized even today but with vast resources wanted to be more secured. There are two types of biometric as physiological characteristics (face, fingerprint, finger geometry, hand geometry, palm, iris, ear and voice) and behavioral characteristics . Sometimes once behavioral trait may be change because of the illness, fearness, hunger etc. Face detection and Identification system is more expensive,easy to understand and non-intrusive process to compare to other biometrics.

II. LITERATURE SOURCES

The examination of many papers are done and are observed according to   proposed taxonomy, in that strength and weakness are clearly stated. After the survey only a few other papers exploit the image processing methods and some advantages are adapted to our work and hence proposed a reference model which exploits image processing methods combining the strengths and eliminating the weaknesses of surveyed models.

A.   "Web Based Student Information Management" by S.R .Bharamagoudar, Geeta:
This project assist in automating the existing manual system. It can be monitored and controlled remotely. This project provides accurate information always. All the years gathered information had been saved and can be accessed at any time. The purpose is to design a college website which contains upto date information of the college. That should improve efficiency of college record management.

B.   "Online Student Attendance System", by P. N. Garad.:
In this project, we gave access to three user i.e. Admin, Student, Others. This project is based on client-server. Here, the serve is Tomcat and client is JSP. In this project teachers or the admin will be filling attendance and sending message to the student who is absent. They will have to fill the attendance form, update thr attendance sheet, sending message to the parents account whose kid is absent, also those attendance is less than 75 privilege to sending message to the students whose fees are pending. he staff can also

view the message whenever they need and also can change the information of students. Parents have privilege to monitor attendance and to view message sent by the class teacher. Students may also have their account with privilege to access message sent by the class teacher and to view the attendance.

III. PROPOSED SYSTEM

It is used for face detection. Algorithms uses 4 techniques.They are Haar –like features, Integral images, Ada boost. Cascading. This algorithm trains a system to identify the differences between the face images and non facial images. We extracts the features of face image and store it in a file, if a given input image processes all the comparison in the file then it recognized as facial image. we are classifying that image is whether the face or a non-face image, just by referring to the file, which is already stored in the database.There is different type of haar feature which are applied on the image to see whether the feature exist in image. The 24 X 24 window is applied in all over the image, in which for each of the operation, we are subtracting sum of the pixels in white region with, sum of the pixels in black region which output an integer value, that determines the validation of the corresponding feature.Integral Image method reduces the cost of calculating sum of pixels while validating a feature. we are doing the same by taking only the corner pixel values. For a given input image, or getting integral image, we sum up all pixels that are falling to the left and top region of the pixel. The advantage of the integral image is; it reduces the computation by 4 times. AdaBoost Training Calculates 160,000 feature's validation for each 24X24 window is practically impossible and computationally intensive. so, we are going to use only the features which have more effective in face detection, rather than less effective haar-transforms. This is done by adaboost, it narrows down to thousands of the features that are redundant to use. Adaboost decides some set of the features and gives weight to each feature, and linear combinations of all these features, is used to decide whether it is face or not. Weak classifiers are some features which at least perform better than random guessing, if we give hundred face images, it will be able to detect more than fifty as face images. The output of the weak classifier is 1, if the feature is recognized else 0. The sum of product of relevant weak classifiers and their weights gives the strong classifier, whose value must be more than threshold for validation as a face image, which is less for a non-facial image.
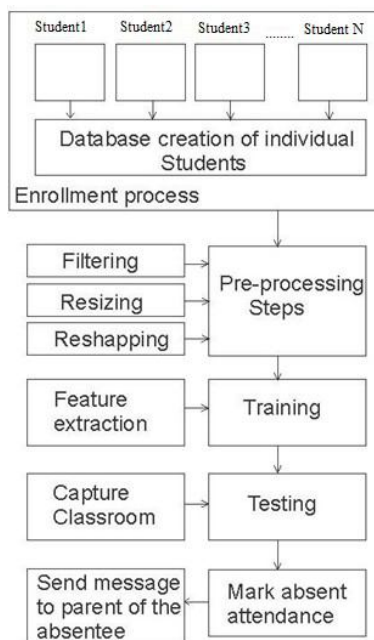

Fig. 1 Block diagram of the proposed system

IV. RESULTS

Five basic face recognition techniques are compared for different algorithms based on recognition rates (percentage) and elapsed time. The common training data set and test data set is used for comparison in all four used techniques. In this work, basically the comparison of various algorithms as stated above i. e; PCA, KPCA, LDA , LEM and LBP is done on the basis of recognition time used in face recognition procedure.In our project the main task is to create a database of students enrolled in a class and then to compare these images with the live captured images. These captured images help in identifying the known or unknown person. The face images get stored in a default folder.
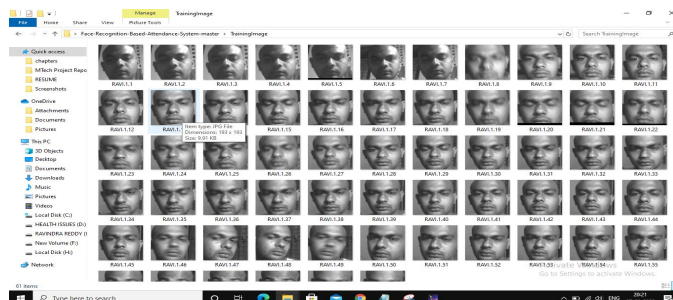
Fig. 2 Data Base Creation

Now live captured image is taken as a test face to identify whether the student is enrolled or not.
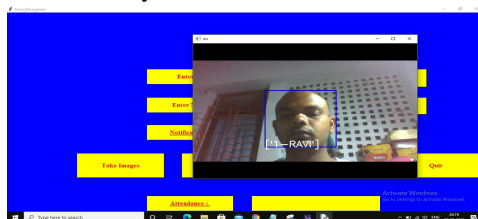

Fig. 3 Face Detection

Captured imaged is detected and it is available in the database and hence face is indicated by blue coloured rectangle and also shows name of the known person, therefore attendance of present student is automatically marked.

V. ADVANTAGES

A. Manual attendance eliminated
B. No need to waste time and efforts.
C. It compares the faces in database that are detected and marks attendance automatically.
D. The system is flexible for the users.

VI. CONCLUSION

Student Attendance Management is very helpful in an institutions or in colleges or in universities. There is no need paper work in this proposed system. Access Can be done from anywhere at anytime. This project Particularly minimizes human effort necessary. This application is Controlled by the college so there is no information leak and Attendance data will be secured. Basically it is a web based application anyone can use the system from anywhere at any time and it is a very simple to get the necessary information with low latency. It is useful to the students to get their report on attendance and internal assessments. Parents also get benefited more since college is going to send the notification of the student using the SMS or gmail will be sent to get the recent updates happen in the college. Since this application will be handled by the college whenever they need any changes in the application they can make it easily without any investment, and the system will be more secure when it is handled by the own Organization.

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