A Literature Survey on Automatic Attendance System for BDCE using Face Detection

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ABSTRACT

Understudy record by and large contains individual data about specific individual alongside photo. To distinguish any understudy, we need some recognizable proof in regards to individual. By and large the quality and goals of the recorded picture sections is poor and hard to identify a face. To solve such issue, we are creating a computer program. Recognizable proof should be possible from numerous points of view like unique finger impression, eyes, DNA and so forth. One of the applications is face identification. The programmed participation the board will supplant the manual technique, which takes a ton of tedious and hard to keep up. There are many biometric processes, in that face recognition is the best method. In this paper we will portray the participation without human obstruction. In this strategy the camera is settled in the classroom and it will catch the picture, the appearances are identified and after that it is perceived with the database and finally the attendance is marked.

Keywords : Face Detection and Recognition, Open CV, Principal Component Analysis (PCA)

I. INTRODUCTION

Maintenance of student's attendance is the most difficult task in various institutions. Every institution has its own method of taking attendance such as using attendance sheet or by using some other biometric methods. But these methods consume a lot of time. Mostly attendance is taken with the help of attendance sheet given to the faculty members. This consumes a lot of work and time. We do not know whether the authenticated student will be responding or not due to interference of noise or lack of concentration. Calculation of attendance is another major task which may cause manual errors. Exceptions may occur, the participation sheet may end up lost or stolen by a portion of the understudies. To overcome such troubles we are in need of an automated attendance management system.

Face recognition has many advantages compared to that of the other biometric methods. Some other biometric methods follows certain restrictions i.e. there should be some voluntary action involved that object should stand straight in front of the camera or should press their finger on touchpad to give the biometric whereas in our technique there is no action involved because the camera takes the picture far away and with the help of these we easily recognize the faces. Face detection involves detecting candidate regions in an image that are possible faces. Next step, Face recognition involves identifying the student by comparing the detected face with the stored images and then classifies or recognizes his/her identity. Even though there are no standard algorithms for face recognition of faces there some classification technique for face recognition like Principal Component Analysis, Linear Discriminant Analysis, Support Vector Machine, etc. In final step ones the

student is recognized, his/her attendance is mark in excel sheet.

There are few disadvantages to overcome with the help of automatic attendance management which does not consume time and the date is not lost until we erase the data. This method is most efficient in this day.

II. SYSTEM ARCHITECTURE

Our proposed "automatic attendance using face detection" is comprised of numerous operational modules which are essential for the key operations in the system. Each module holds a specific functionality regarding the database and the datasets consisting of images and excel sheets which are processed into the system architecture. The system have the following operational flow and it is shown by the figure given below.
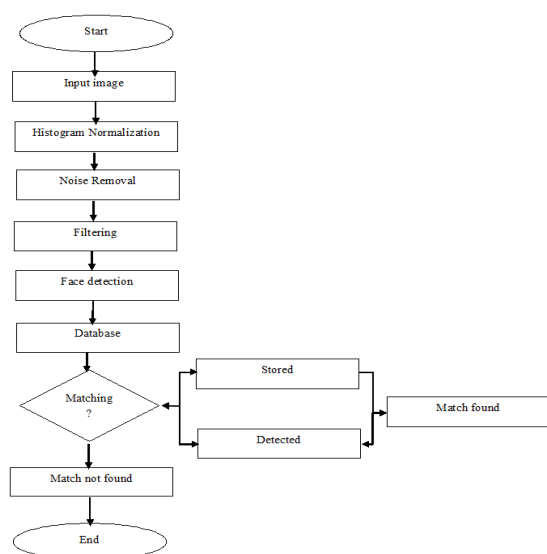
Figure 1. Flow diagram of the proposed analysis system

The flow diagram above represents the various modules in which the data is being processed at the time of operation.

III. LITERATURE REVIEW

Maintenance of student's attendance is the most difficult task in various educational institutions.

Attendance can be maintained by using various types of techniques. Kawaguchi [1] proposed a lecture attendance system with a new method called continuous monitoring, with the student's attendance marked automatically by the camera which captures the photo of a student in the class. These techniques can consume a lot of work & time.

V. Shelu and A.Dika, [2] proposed a real-time computer vision algorithm in automatic attendance management system. The system uses a non-intrusive camera that can capture images in the classroom and compares the extracted face from the captured image with the database inside the system. This system also uses a machine learning algorithm which is usually used in computer vision. In addition, Haar classifier is used to train the images from the camera. The face captured by the camera then converted to greyscale and the image is put to subtraction process. The image then stored on the server to be processed later.

N. Kar,.[3] proposed an automated attendance management system using facial recognition technology that used the principal component analysis. This system uses two libraries which are OpenCV, a computer vision library, and FLTK (light toolkit). Both libraries help the development of the system, for example, OpenCV supports algorithm and FLTK is used to design the interface. In this system, there are two processes, namely, request matching and adding a new face to the database. In request matching, the first step is opening the camera and capturing the photo, then the face is extracted from the image. The next step is recognizing the face with the training data and projecting the extracted face onto the principal component analysis. The final step is displaying the face that closely matched the acquired image. The Haar cascade method then performed to the image to find the object in the image in different window size. The next step is storing the image into the database, then learning the face, and followed with an application of principal component analysis algorithm. The final step is storing the information inside the

face XML file. The system is focused on the algorithm to improve the face detection from acquired images or videos.

The proposed system uses Recognition technique. Photometric Recognition system is a technique which overcomes the above limitations of the previous methods. Photometric technique which is an Arithmetical strategy, can serves us discovering image processing which is also referred to digital processing. This system proposes a batch of pictures prepared & are underscored dependent on the improvement of the pictorial data for human collaboration. Thus, the single pictures are compared to the selected image from the database. The images acquired can be treated as two dimensional or three dimensional. Hence image processing is more popular in the today's generation. This is because of its availability of computer, graphics software, large memory size, its supports for surveillance and security purpose etc. We can come to the conclusion that this is the foremost & supreme technique which can erect & multiply the automated attendance management system. The various system proposed by the authors.

An Author proposed that a lecture a lecture attendance system with a new method called continuous monitoring, with the student's attendance marked automatically by the camera which captures the photo of a student in the class. The system has a simple architecture with only using two cameras installed on the wall of the class. The first camera is the capturing camera used to capture the student image in the class and the second camera is sensor camera used to capture the student image in the class and the capturing camera will snap the student image. The system then compares the picture taking from the capturing camera and images in the database. This process is done repeatedly to complete the attendance marking process.

An Author proposed a smart attendance marking system that combines two different algorithms, principal component analysis, and artificial neural network. The study is able to solve the problem or learn from the input data and the expected value. This system also uses back propagation algorithm combined with mathematical function. The result shows that the system is able to recognize the faces in various environments.

An Author proposed a system which implements automatic attendance using facial recognition. The system can extract the object in the face such as the nose or mouth by using MATLAB with principal component analysis (PCA). The system designed to resolve issues of attendance marking system such as the time-consuming issue. Hence automatic attendance can be applied using facial recognition and using MATLAB software integrated with facial recognition technique.

An Author proposed an automated attendance management system using facial recognition technology that used the principal component analysis. This system uses two libraries which are OpenCV, a computer vision library, and FLTK (light toolkit). Both libraries helps the development of the system, for example, OpenCV supports algorithm and FLTK is used to design the interface. In this system, there are two processes, namely, request matching and adding a new face to the database. In request matching, the first step is opening the camera and capturing the photo, and then the face is extracted from the image. The next step is recognizing the face with the training data and projecting the extracted face onto the principal component analysis. The final step is displaying the face that closely matched the acquired image. Meanwhile, adding a new face to the database process is started with capturing the photo, and then the face is extracted from the image. The Haar cascade method then performed to the image to find the object in the image in different window size. The next step is storing the image into the database, then learning the face, and followed with an application of principal component analysis algorithm. The final step is storing the information inside the face XML file.

The system is focused on the algorithm to improve the face detection from acquired images or videos.

IV. OBJECTIVES

This task is expected to distinguish an individual utilizing the pictures recently taken. The identification will be done according to the previous images of different persons.

The objectives of this project are given below:

1. Detection of unique face images amidst the other natural components such as walls, backgrounds etc.
2. Extraction of unique characteristic features of a face useful for face recognition.
3. Detection of faces amongst other face characters such as beard, spectacles etc.
4. Effective recognition of unique faces in a crowd (individual recognition in the crowd).
5. Automated update in the database without human intervention.

V. CONCLUSION

This paper reviews the attendance management system based on facial recognition for BDCE. It replaces the traditional method of attendance management with an automated system which is fast, efficient, cost and time saving and the attendance is taken more accurately. This method requires only simple hardware and software for installation. One difficult task in this system is face recognition; PCA gives better performance of facial recognition by analysing facial features, region of interest and comparing with the database faces. The techniques used are trustworthy, attainable and safe enough for use.

We have gone through some algorithms as a necessity so which we used to detect the images and also to rise the outcomes of the system. The focus in future work is improving the accuracy of the system by incorporating principal component analysis with convolution neural network. The objective is to obtain good generalization abilities for the education system. Hence this system is expected to give desired results. Also the efficiency could be improved by integrating other techniques within future.

Although a conclusion may review the main points of the paper, do not replicate the abstract as the conclusion. A conclusion might elaborate on the importance of the work or suggest applications and extensions. Authors are strongly encouraged not to call out multiple figures or tables in the conclusion—these should be referenced in the body of the paper.

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