A Review Paper on Attendance ManagementSystem Using Face Recognition

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Abstract - Identification of any peoples in any organization or colleges for the purpose of attendance marking is one such a softwareof face recognition. The use of Attendance Management System is toperforms the regular activities of attendance marking and analysis with reduced human intervention. In this method the camera is settled and it will capture the image, the faces are recognize after that recognized along with the data base an deternally the attendance is marked. This system is depend on face detection and recognition concept, that detects the employees or student using webcam when they arrive in the office or class room and marks the attendance by recognizing.

Keywords- Face Recognition, Attendance Management System, Haar Cascade.

I. INTRODUCTION

Maintaining of student attendance using old-style methods is very unattractive for every institute and also consistency of that method is very poor.

Attendance Management System Using Face Recognition is swapping the activity of traditional attendance where teachers take manually attendance of every student in class. This systemused for different administrations and also differenteducational institute for marking the attendance. Face recognition is the biometric method of identifying an individual by comparing live capture. Face recognition technology is gradually evolving to a universal biometric solution since it requires virtually zero efforts from the user end while compared with other biometric options.

Machine learning is one of the finest domain among all the domains because it provide dataset only once as a input and provide a desirable output by applying a different machine learning algorithms. In earlier days each education institute, school or colleges are considers a student attendance factor verycautiously.Computerized attendance management systemusing face recognition will help most because it handles all theproblems related to time, safety problem and delegation issue very simply.

Haar Cascade is basically used to complement these system.Haar Cascade is offen applied for analyzing images. Attendance Management System Using FaceRecognition is saves time, avoid fake attendance also help for security purpose.

II. LITERATURE SURVEY

In[1] 2017 Samuel John presented a Face Recognition Attendance System with GSM Notification. This system uses the Viola-Jones algorithm. This algorithm used for detect faces. Also, Fisher faces algorithm was used to create patterns of the faces which were caught. That created templates stored in the database. This system used library which is OpenCV and used Software Development Kit (SDK) to create the graphical user interface.

In[2] other paper, Jenif D Souza introduces a Automated Attendance Marking and Management System by Facial Recognition. This system marked students attendanceautomatically by the camera which captures the photo of studentin the class. This system uses the algorithm called Histogram. Histogram algorithm used for face identification purpose. In this algorithm, The face image is converted to matrix form. Histogram are used for recognize of the exact faces.

This system overcome the problem of time consuming.

In[3] 2019 Nandhini R. introduced Attendance System based on face recognition. This system capture the video of the students, convert it into frames and store it in the database.

Also, Convolution Neural Network(CNN) algorithm is used to detect faces. This System helps in improving the accuracyand speed.

In[4] 2019, Shreyak Sawhney, karan kicker, Samyakjain introduced Real Time Smart Attendance Management SystemUsing Face Recognition Techniques**.** In this system they use face detection and recognition method using convolution Neural Network and Principal Component Analysis (PCA) but using two camera some camera is used for the face detection and recognition at the door of classroom and the camera is used at inside the classroom for checking proxy attendance.

In[5] 2016, E Vardharajan, R Dharani, S Jeevitha,SHemalata introduced Automatic Attendance Management System Using Face Recognition**.** In this system the use Eigen Faces, Eigen Weight method for face detection this system the camera detention the image and then system crop the faces ofstudent and tie the faces with student database.

In[6] 2017, Poornima S, Sripriya N introduced Attendance Management System using Facial Recognition with Audio Output and Gender Classification. In this system they use Viola Jones algorithm and Principal Component Analysis(PCA) for the face recognition and they also use the gender classification and Voice conversion module. After the face detection and recognition the system use the Microsoft Speech API for announce the absent student names this can serve as a cross check.

In[7] 2018, Omkar abdul rhmansa lim introduced Class Attendance Management System Using Face Recognition. The system is based on

Raspberry Pi. By facing the camera. It will capture the image. The Raspberry Pi is a programmed to handle the face recognition by implement in the Binary Patterns algorithm LBPs.

In[8]2018,KritikaShrivastava,ShwetaManda,Prof.P.S. Chavan introduced Automated Attendance System based on Face Recognition and Gender Classification using Haar-Cascade, LBPH Algorithm along with LDA Model.

In[9] 2017, Prof. Arun Katara1 , Mr. SudeshV. Kolhe2 introduced Attendance System Using Face Recognition and Class Monitoring.This paper introduced the raspberrypi.They used OpenCv library installed for both. The web camera connected with raspberry pi and also database which is connected to pi.

III. METHODOLOGY

This Proposed system improve the attendance management system using of our unique characteristics of there face. For the purpose of confirmation and documentation face acknowledgment technique is used.
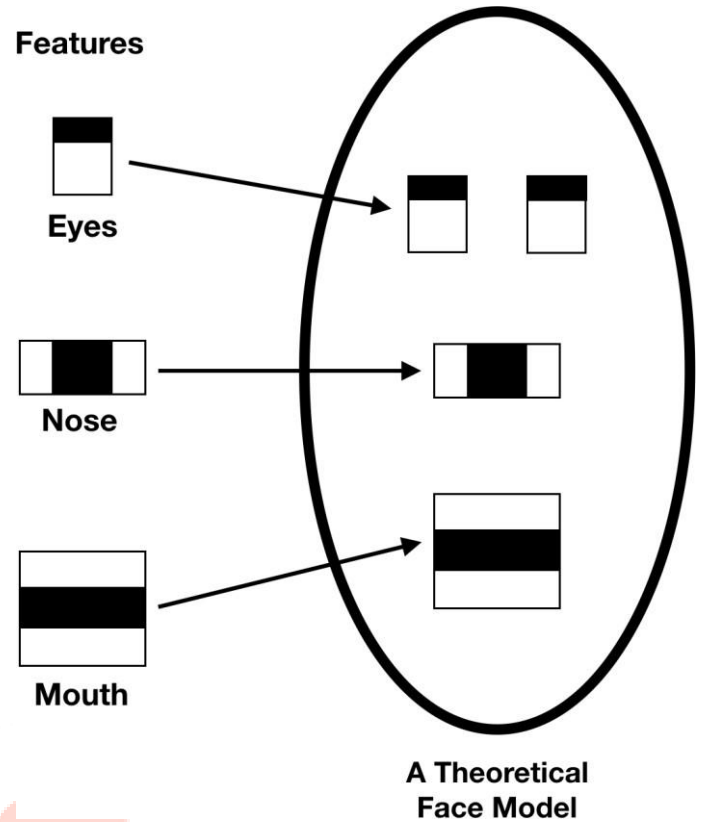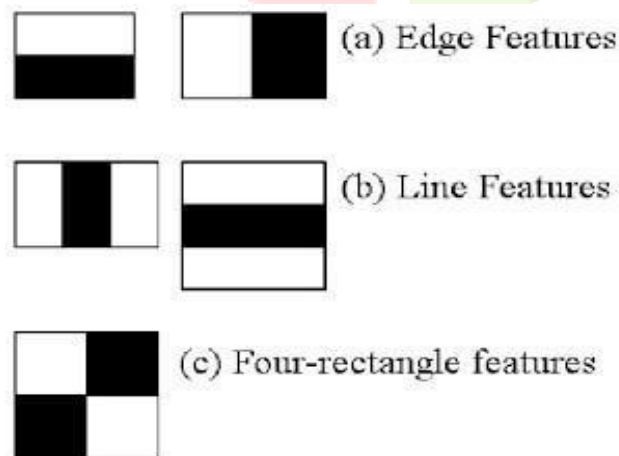
The algorithm which use for biometric facial recognition follow different steps of image processing.

Capture- The first step of this system is to gather physical or communication tests in predefined situations and through the state period of that time.

Extraction- In this step, all data will be extracted from the sample screated to make template using facial recognition .

Comparison- After finishing the extraction step collected data is compared with existing that templates.

Matching-In this last stage of face recognition, the face features of a gathered samples are matching with the one from a facial database or not. It will take just a second. In this system we can use Haar Cascade method. A Haar Cascade is used in image recognition and image processing that us specially designed for pixel data.

(a) Edge Features

(b) Line Features

(c) Four-rectangle features

Features

Eyes

Nose

Mouth

A Theoretical
Face Model

Paul Viola and Michael Jones planned Haar Cascade as a machine learning object detection algorithm in their paper "Rapid Object Detection using a Boosted Cascade of Simple Features" in 2001. It is a machine learning-based method in which a cascade function is trained from a large number of positive and negative pictures (positive images are those in which the object to be detected is present, negative images are those in which the object to be detected is not present).
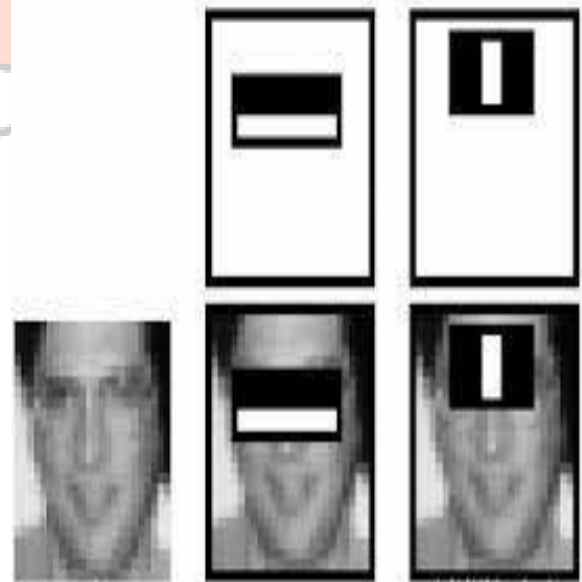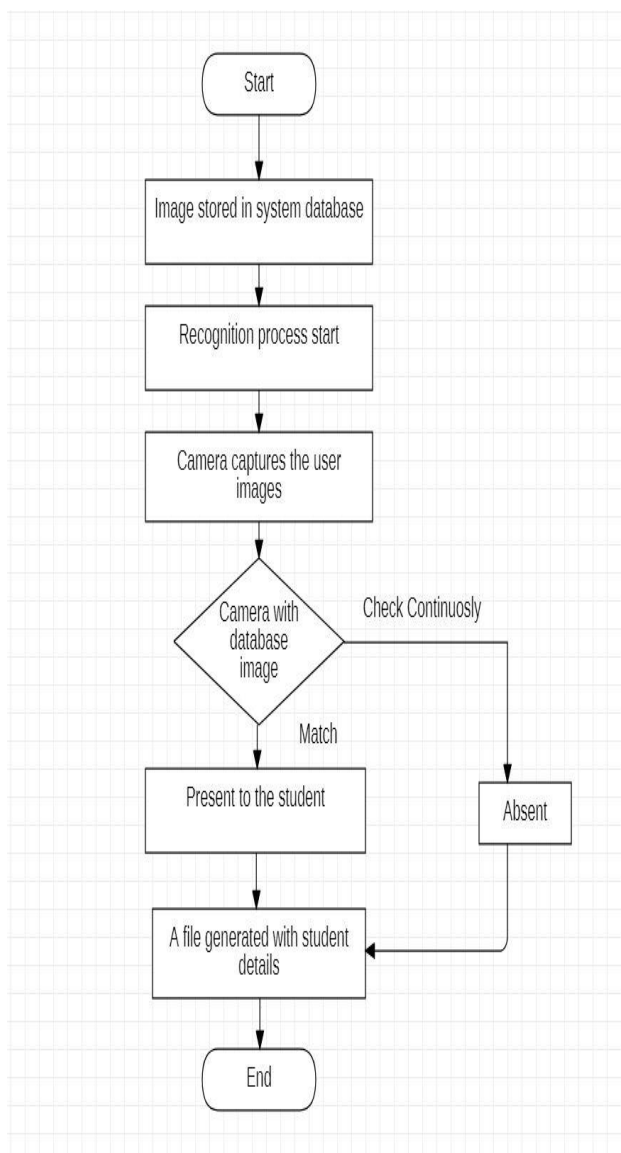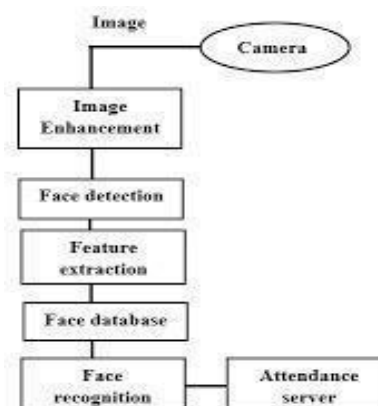

Fig. Max Pooling.

Flowchart :

Sr.No.	Paper title	Author Name	Summary
1.	AUTOMATIC ATTENDANCE MANAGEMENT SYSTEM USING FACE DETECTION	E.Varadharajan,R.Dharani, S.Jeevitha, B.Kavinmathi, S.Hemalatha	• Methodology 1. Background Subtraction 2. Face detection and cropping • Removes the risk of Manual Errors • Automated plus Accurate • Decreases the Loss of Output • Saves Time
2.	CLASS ATTENDANCE MANAGEMENT SYSTEM USING FACE RECOGNITION	Omar Abdul Rhman Salim, Rashidah Funke Olanrewaju, Wasiu Adebayo Balogun	• Methodology 1. Haar Feature-based Cascade algorithm 2. Local Binary Patterns (LBP) 3. Algorithm • This system saves time. • Decreases the Loss of Output
3.	ATTENDANCE MONITORING SYSTEM USING FACIAL RECOGNITION WITH AUDIO OUTPUT AND GENDER CLASSIFICATION	Poornima , Sripriya , Vijayalakshmi,Vishnupriya .	• It is cumbersome to maintain a huge set of records. As and when the class strength increases, the number of records also keeps increasing. • It is time consuming. Every time, the teacher in-charge has to take time out from his/ her class to mark attendance, thereby consuming time other than knowledge transfer.
4.	ATTENDANCE MANAGEMENT USING FACIAL RECOGNITION	Rajath S Bharadwaj, Tejus S Rao, Vinay T R	• Existing algorithms: 1) Eigen face 2) Line Edge Map 3) Histogram of oriented gradients (HOG) • The **disadvantage** of this is that,it makes the **attendance** marking process slower and less efficient.

IV. COMPARISON OF FACERECOGNITION TECHNIQUES

There are changed technical paper about the Attendance management system using face recognition. We studied some papers, They used changed methods or techniques. Below is the chart of instant of some papers.

We studied more than five research paper to make our project and this paper support us to solve various problems and concepts regarding how to make project more efficient and also less time consuming.

V. BLOCK DIAGRAM

- **IMAGE ENHANCEMENT**

In Image Enhancement process it takes images from user side check all quality of images and enhance quality of image using method in machine learning.

Image quality is the most crucial factor for specify a particular person so Haar Cascade algorithm is very accommodating for the image enhancement and improvement process.

- **FACE DETECTION**

In attendance management system initially detention images enroll by the student and that Image patterned in our database created by the management side.

Registered image matched to every database image if that is existing in system database then that student patent as a present either marked as a absent.

- **FEATURE EXTRACTION**

In this step, all data will be extracted from the sample screated to make template using facial recognition.

- **FACE DATABASE**

In this step system can use the dataset that is earlier present-day in the database of system for parallel a entered carbon copy with database images.

In database save all student info for helping to system to take detailed student presence in very less time.

- **FACE RECOGNOTION**

In this last stage of face recognition , the face structures of a collected samples are similar with the one from a facial database or not. It will take just a second. In this system we can use Haar Cascade method.

A Haar Cascade is a type of artificial neural network used in image recognition and image processing that us specially designed for pixel data.

- **ATTENDANCE MARKING**

Attendance marking is the last stage of the system procedures in this stage mark the attendance of student if overall above development are done and recognize a copy suitably , then it will marked as a current otherwise it will marked as a absent in the server of system.

VI. ADVANTAGES

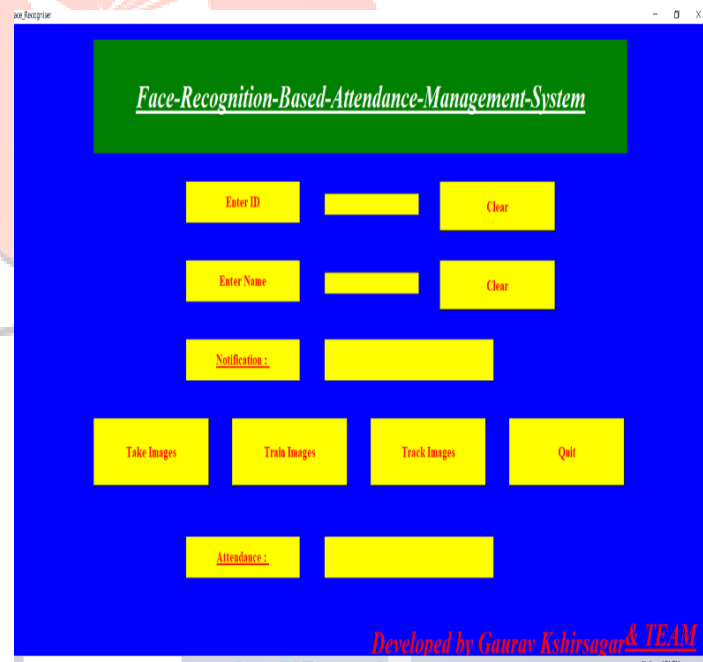- There are many benefits to attendance management system using face recognition such as its convenience

and social acceptability. Increasing security and enhance comfort day today life.
- Attendance management system using face recognition is easy to use and it can be performed without person.
- Attendance Management System Using Face Recognition gives fast and accurate report of Attendance.
- This system has come faster and more accurate under over condition from different angle.
- Attendance using face recognition is time saving and without human errors. Sometime miss the attendance form student side or Teacher side and so it will be very helpful for incredulous this type of all disadvantages.
- In pandemic situation it is helpful for student and teachers health security.
- Attendance using face recognition is also higher security in our work place.
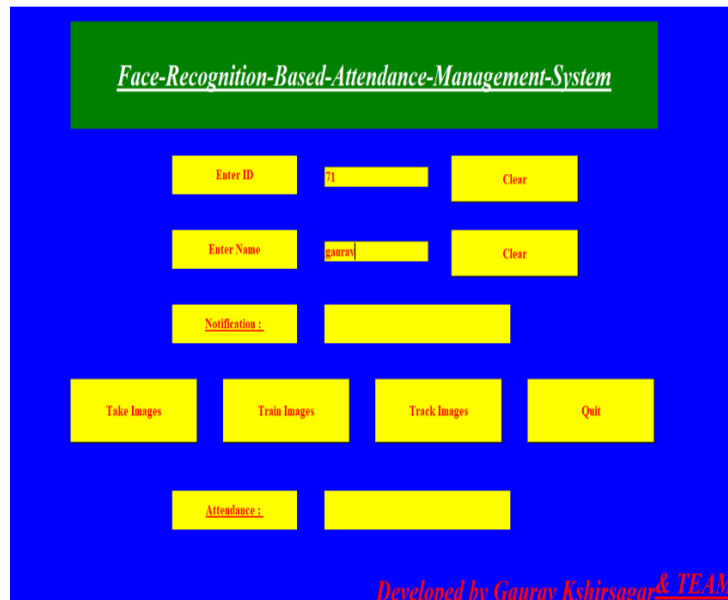
VII. RESULT

Attendance Management system using face acknowledgments is very simple to use and works proficiently with less time condition. This is the automated system so if admin created a student profile once in database then it will use automatically by the number of times in face detection and recognition process. This system is based on Haar Cascade methods.
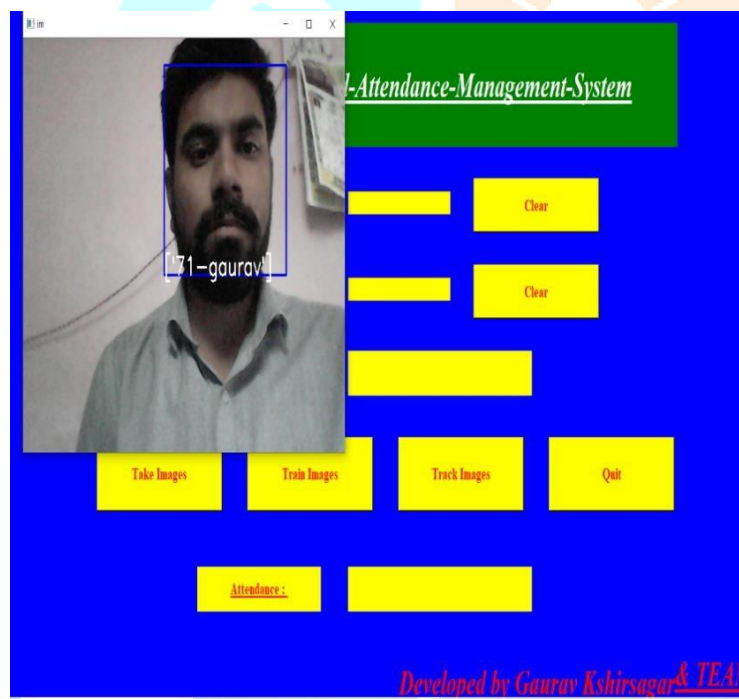
For initializing this system, admin firstly create all student profile with their name, roll number, department and other educational details.

We have created a dataset of our class student for purpose of systemtesting.

Server created a folder to show the student details of attendance accordingly to the time table all subject are fulfilled when the student arrives for lectures then system automatically capture the image, detect all faces then enhance all the captured images and compared with faces that is already existed in our dataset.

When the all process has done then generate the marked attendanceshit of student in excel shit format.
 Attendance management system is recognize all images with different angles and lights, If some entered data is not in our datasetthen it is stored in dataset as a unknown data.
The attendance of student faces recognition is marked in realtime,and in the final step of the procedure is that the excel shit of attendance is saved by the system robotically and imported in studentdatabase.

VIII. CONCLUSION

In this proposed Attendance Management System Using Face Recognition is the better model for attendance management for students in the classroom and also at the other places. Now in this todays era a large number of systems are available like biometrics or other methods but the facial recognition is the best option for the accuracy
.There is no special hardware requirement for the implementation of the system. A camera Laptop and database are sufficient for developing attendance management system using face recognition.

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