FACE RECOGNITION ATTENDANCE SYSTEM

[1] Mr. Jayendra Kumar, [2]Jamu Chaitanya, [3]K Tejaswini , [4]G Priya Darshni

[1]School ofComputer Science and Engineering, HYDERABAD,Telangana

[2]Department of Computer Science

Anurag Group Of Institution

Abstract : The main aim of the software application is to take attendance in an easy and secure way using face recognition. The system is based on a special type of CNN architecture known as Siamese network. This software can be used in college and office. The software first captures an image of all the authorized persons and stores the information in database. The database used in this application is mongo DB. It's an open source document database. The software can be used for security purposes in organizations and in secured zones

IndexTerms - **Face Recognition, Deep Learning, Attendance**

I. INTRODUCTION

Attendance is prime important for both the teacher and student of an educational organization. So it is very important to keep record of the attendance. The problem arises when we think about the traditional process of taking attendance in class room. Calling name or roll number of the student for attendance is not only a problem of time consumption but also it needs energy. So an automatic attendance system can solve all above problems. There are some automatic attendances making system which are currently used by much institution. One of such system is biometric technique. Although it is automatic and a step ahead of traditional method it fails to meet the time constraint. The student has to wait in queue for giving attendance, which is time taking. This project introduces an involuntary attendance marking system, devoid of any kind of interference with the normal teaching procedure. The system can be also implemented during exam sessions or in other teaching activities where attendance is highly essential. This system eliminates classical student identification such as calling name of the student, or checking respective identification cards of the student, which can not only interfere with the ongoing teaching process, but also can be stressful for students during examination sessions.

II. RELATED WORK

The existing systems at present, attendance, marking involves manual attendance on the paper sheet by professors and teachers, but it is a very time-consuming process and chances of proxy are also an issue that arises in such type of attendance marking. Also, there is an attendance marking system such as RFID (Radio Frequency Identification), Biometrics etc. But these systems are currently not that popular in schools and classrooms for students. Drawbacks in existing system Manual systems put pressure on people to be correct in all details of their work at all times, the problem being that people aren't perfect. These attendance systems are manual. There is always a chance of forgery (one person signing the presence of the other one) Since these are manually so there is a great risk of error.More manpower is required. Calculations related to attendance are done manually (total classes attended in a month) which is prone to error. The attendance sheet could be stolen or lost

III. PROBLEM STATEMENT

Attendance of every student are maintained by every school, college and university. Empirical evidences have shown that there is a significant correlation between students attendances and their academic performances.There was also a claim stated that students who have poor attendance records will generally link to poor retentation. Therefore , faculty has to maintain proper record for the attendance.The manual attendance record system is not efficient and requires more time to arrange record and to calculate the average attendance of each student. Hence there is a requirement of a system that will solve the problem of student record arrangement and student average attendance calculation.One alternative to make student attendance system automatic is provided by facial recognization.

IV. PROPOSED SYSTEM

The system is developed for deploying an easy and a secure way of taking down attendance. The software first captures an image of all the authorized students and stores the information into database. The system then stores the image by mapping it into the specific created folder. Next time whenever the registered person appears infront of the camera the system recognizes the person and marks his attendance along. Then the person who is identified by the system, his/her attendance in the system is incremented. When the system is closed, a excel file consisting of attendance of all the students is generated. For the updation of attendance in database mongoDB is used.Not only the web server used for offering WWW services but also it can be used for the monitoring and administrative purposes.

V. METHODOLOGY

The application is built using python technology. The database is present on the server which can be accessed by a person using the application. The NOSQL database, MongoDB is used in this application.
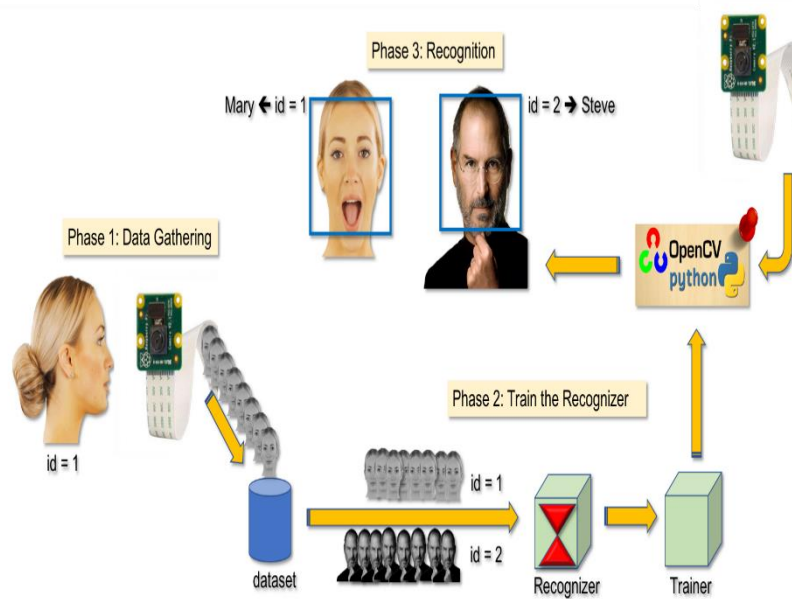

Figure 1 -SYSTEM ARCHITECTURE

5.1Training data

For the database, we need to capture the image from the webcam or the external camera. To do so, in Matlab, we need to install the drivers from the math works website based on the type of camera we are using. Next, we need at least 500 to 1000 captures of each person for getting higher percentage of accuracy and meet the purpose we are doing in this project. We can store the data in the form of separate folders distinguishing each person from others.

5.2 Image Capture

We need some HD camera in order to get results. We can capture the images from the video stream or by capturing each and every image from the webcam manually. Doing the frame capture from the stream of video will give us results in less time but we won't be able to capture the face properly in case we lose light or something and if the face is not captured properly.

5.3 Face detection

For face detecting, we can do it using the object cascading class and we use the b-box method. The detection of the face using the object cascading is bought from the most popular facial recognition model Viola Jones. In here, there are several objects are present. These are there in the form of small blocks containing them. They are taken through an image and are moved through each and every block of the image and are checked for overlapping through them. First we will convert the image from the red blue green to gray scale image. The faces from the image captured is to be collected. The captured faces are cropped into small images of resolution 112x92. It would be around 11 KB of size. 3.4 Face Recognition The faces taken in the database are needed to loaded into our workspace. We will load the galleryimages into that. Now we need to split the data of each and every person into testing and training data. Let us take it in the ratio of 0.2:0.8 from the database. Now we will be extracting the HOG features of all the training individuals and store them in the form of bits and bytes. We need to fetch the cropped and gray scaled images. Now the training datasets are extracted with the HOG features and are stored with a count.
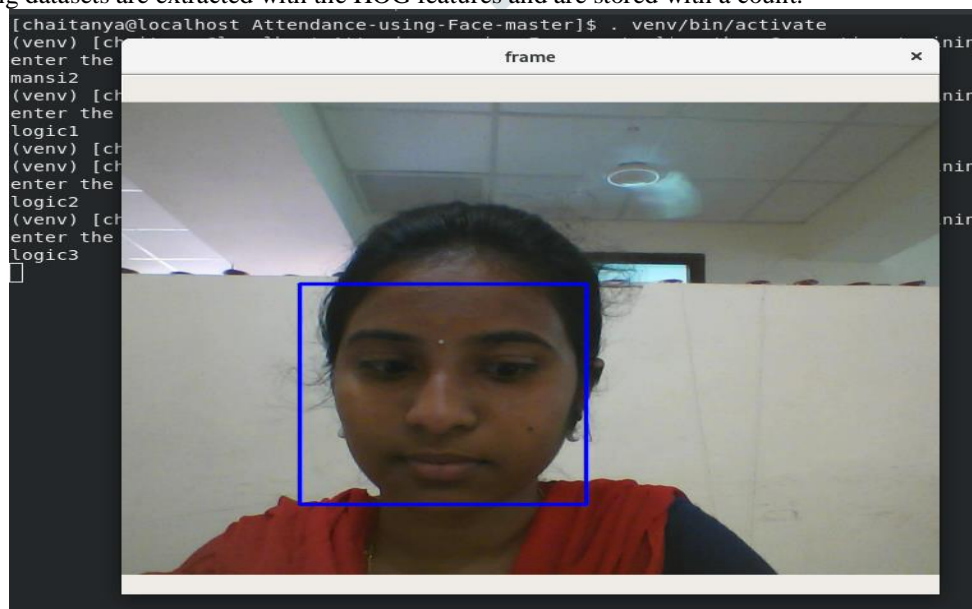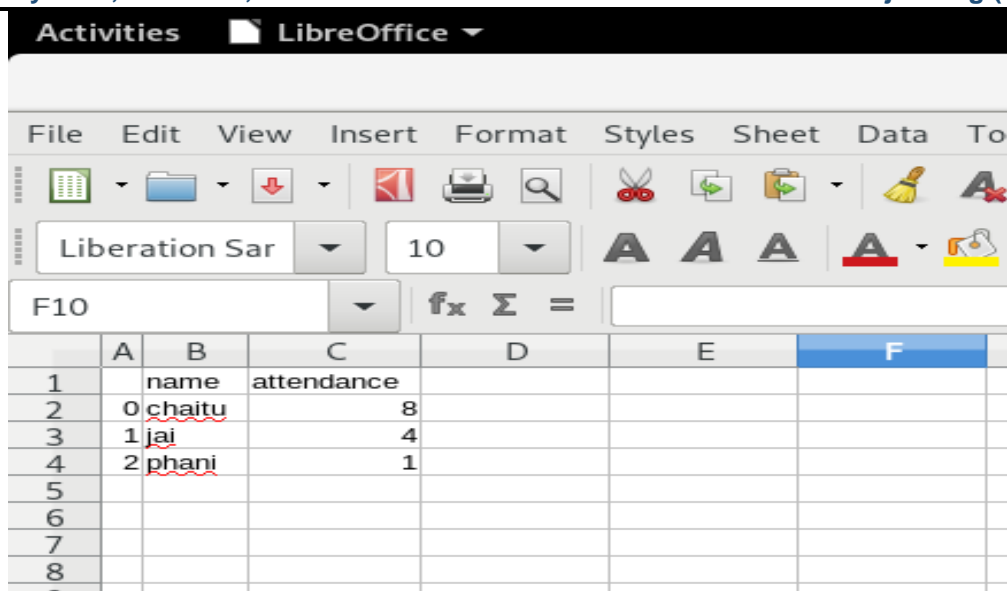

Figure 2 -Face Detection

Figure 3 -Generating excel sheet

VI. CONCLUSION

The aim is to take attendance using face recognition and the excel sheet is generated.This can replace the old manual methods. This method is secure enough, reliable. No need for specialized hardware for installing the system in the office. It can be constructed using a camera and computer.

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