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Real Time Face Recognization Attendance Management System

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Abstract **-** Real Time face recognition system which is worked on the scenario of recognition of face detection and further also we used as it for attendance marking purpose. Marking attendance in the classroom or in any institution level during ongoing period of time is not only headache activity. “For this create an unpredictable or an unusually high number of students which are present during the ongoing lecture so there will be high chance of probability of proxy’s attendance if the guide did not connect the class so there are highly chances”. Attendance marking system with conventional types of method has been an area of challenges occurs. Technology plays a significant part in today's society. Most of the extensively utilized technologies is face recognition. It should be used in for, authentication, and identity, as well as unlocking phones. It is extensively utilized, despite shown less accuracy when determine with iris detection and fingerprint identification. Furthermore, this technology is employed in a variety of settings, including schools, colleges, hospitals, and a variety of others. This technology is commonly used in schools and colleges to provide facilities to teachers, such as reducing teachers' workload because taking attendance with the use of the computer is quite time intensive. There is also some specific advantage if we talk about through the face recognition it improve the quality of level toward the institutions that’s helped in developing the area of education advancement level.

In this system we can prefer the allotment of multiple attendances marking system through which we can properly take the attendance of students and also if there is unrecognized student is there then the system will take the image of that person also then further it can be verify through the consultant of students. The primary goal of this paper or proposed work is to streamline attendance tracking in such a way that it is understandable and affordable to all institutions. In this system the face will be recognized with face recognition algorithm which we will used is Haar cascade algorithm and lbph face algorithm. After that there is the trained images taken with the algorithm we used that is haar cascade these algorithm take up to 50 images then it will compared to the current image of the following students and then after matching the data stored in the excel sheet of attendance.

Keywords : *Haar-Cascade,Open-cv,face recognition time and date,pandas and psyttx3*

INTRODUCTION

Face recognition and real time image processing, which could be a very fundamental and interesting topic that’s really called in the real-time world as biometric identification, are quickly suppressed by the other kind of function system as a face recognition, which uses a group of features distinct to at least one or more than one person.

The proposed system will be worked on to form an attendance system using multiple marking according to the face recognized. There is real time image processing should take place according to which minimum possibility of error happened. In this era of advance internet computer technology has worked on many areas of people lives and work. In the past few years, the face recognition application system has been developed continuously rapidly as computer security technologies and for other purpose. These technologies also helped

in the current scenario against the terrorist attack activities for recognizing the person. As compared to the fingerprint attendance system there is possibility of an error rate is 10% and their case also originated about the fingerprint cannot hit, which seriously cost the effective way of efficiency in case of large area sites. The design of face recognition attendance with real time image processing caused the positive effect in enterprise in future. Basically we deal in the currently accuracy rate of the system that maximize our result. This is real time identification face which used to determine the faces that to be recognized where the updation of attendance shown in the interface of the paper or proposed work and also a excel sheet generated on it

LITERATURE SURVEY

There are numerous applications available that are very similar to the proposed system principles for recording classroom attendance using facial recognition techniques. A reference book of proposed programmers was created to aid in the analysis of these plans. We have seen a lot of different proposals regarding the program's goal. The proposed system basic case study was constructed or built around a specific source connected to the proposed facial recognition and image processing technology. The main source of descriptive framework was designed using alternative frames techniques in the proposed system. [1] "This program uses the concept of DNN of student faced and of the PCA algorithm and the LDA images of compression and SVM segments with CNN, they have obtained 86 percent accuracy on a site that contains eleven images, a website built to extract frames from the student's recorded video and subsequent frames are then stored on the file". [1] "THE author has developed the system ideas using a door-mounted raspberry pi camera module, and the database is connected to a web-based server management system. When a Haarcascade capture an image, the Local binary algorithm then applied on it, and if it resembles an image stored on a website, the servo motor opens the door to the reader. The system is used has 95 percent accuracy and 11 image databases."

RFID based student attendance system of which According to the fourth research journal "RFID based Student Attendance System" (Hussain, Dugar, Deka, Hannan, 2014), the proposed system solution is almost same to the first research journals in which RFID technology which is used to developed the systems, travel plan. In this program, the tag with the student is also used as a way to track the presence of students. The difference between the original journals and that is the where the information for existing can be accessed only through the system and provide very easily through the retrieve information. ALSO these program was incomplete in the sense that, first of alls it is not possible as an RFID reader can only work if connected to a PC. SECOND…the rfid tag is not a genuine information that can identify the reader differently thus leading inacuurate on the number of attendance info.

The authors here used CNN which is called (Convolutional Neural Networks) locate and to extract elements from what we capture images through that contain readers' faces. They also used CNN to train the model and svm which s called (Support vector machine) segment to classified through the training images. They found a 95 percent accuracy rate.

EXISTING SYSTEM

"Traditional system" of this paper or proposed work that is we have seen like pen and sheet method and signature on sheet are making high possibility likes giving false proxies and signatures of someone else is common activity among student today ,student like to perform this advantage over and over again and like fingerprint system there accuracy rate is not much efficient in the large gathering area so for that it is not much used as that, but face recognition the system is identifying uniquely each and every person and person cannot be do the unwanted proxies of other person that's make a unique features of this. Overall a very simple fact that is, usually unless you are in physically present

System Creation and Training

THE first interface where we capture the classroom students images through the help of library function that is open-cv with real time image, the main activity occur in the conversion of gray scale , and split the all form of images into the gray scale and kept the multiple images of students through real time image and according to the same images and it trained and kept into the folder while name specify training images. After that using lbph algorithm and there histogram values they compared the image which we stored as trained images against

the face which system detect. For these process there should be the used of software which called opencv for purpose of video frames

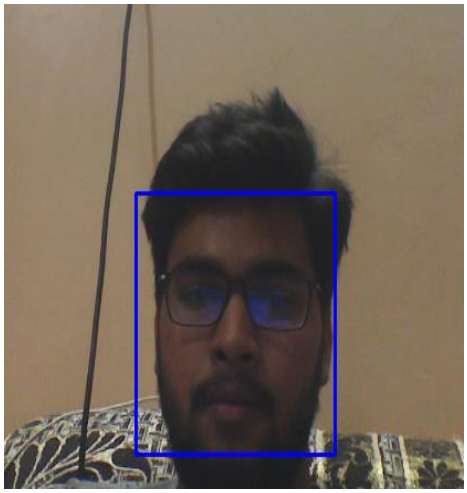


Figure 1. primary database

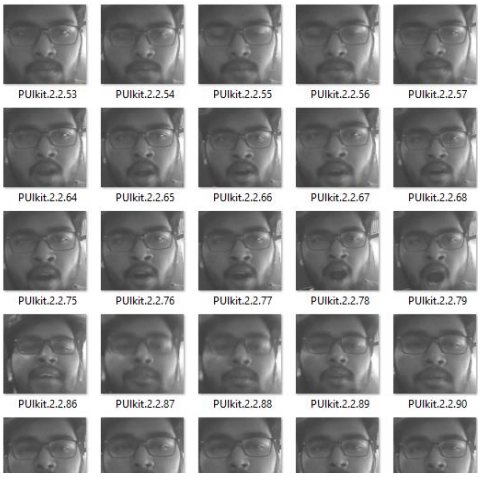


Figure 2. Images stored in the database.

These phase is starting phase of recognition it basically start on the real time image processing capture the images of the registration person through the Droid cam, this is the initial phase of the system after 100 second the system take the images and try to trained the images into the specific folder where the take up to maximum 50 images of the person, all the trained images stored in the file according to which the person can be recognized as shown in figure 2.

Image trained phase

Now in second stage, a pop out frames comes out and once the video start shooting , at the same point of time the Haar-Cascade algorithm works and take the images of person and trained the images and get one by one individual facial images and optimized the features of their histogram value faces using depend on the features of edges and line both, the Haar-Cascade algorithm worked by giving us by parts of the most face needed to be seen that is ROI (Area of Interest) and processed and subtraction with the exception of other facial regions that does not played a role of image processing and parallel components. Once the face found to be extracted and stored.

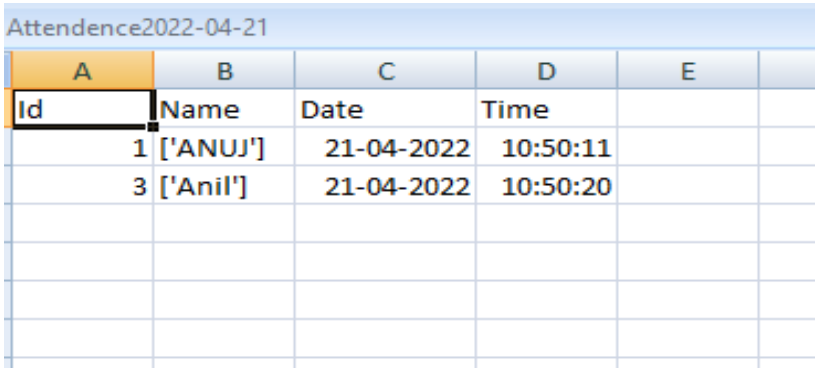
Text to speech

We have used the text to speech library system here with the library function of pysttx3() which initialize the

speech system into the paper or proposed work which act as a after the "picture is matched or recognized" to the person whose data is saved in the database, a confirmation sound is played, allowing students to acknowledge that their attendance is recorded via voice text

Attendance marking phase

In these phase when the face of the person recognized then we used the function of pandas, date and time trough which we generated an excel sheet with the format of .csv with the convention of date and time according to which the current scenario of date and time shown in the attendance file and also we have generated different different file according to the current date of different –different days this help in to maintain the record of the file system.



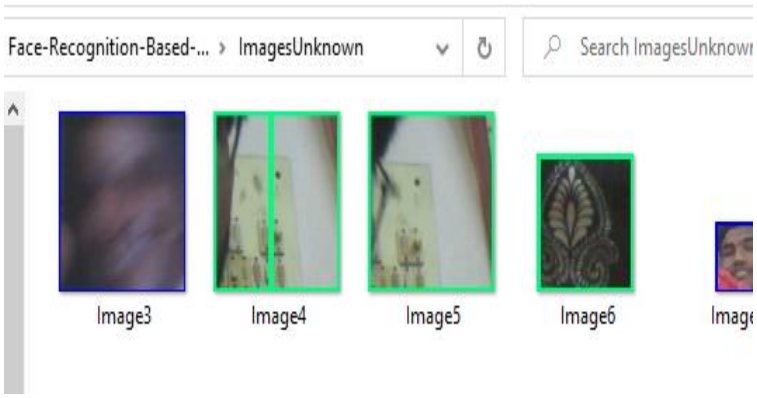
Attendence2022-04-21

	A	B	C	D	E
1	Id	Name	Date	Time	
2	1	['ANUJ']	21-04-2022	10:50:11	
3	3	['Anil']	21-04-2022	10:50:20	

Figure shows of attendance marked on the sheet.

"There is library in python that's called pyttsx3; basically it is text to speech system conversion in python library. So it is invoked the pyttsx3.init () functions to induce a references. there's two voices during this function that's male voice and feminine voice so we are generally used male voice in our paper or proposed work, so after the taking the attendance through the camera there's voice generated through which the coed can confirm their attendance system which announced by their name and called your attendance is marked successfully".

We have also used a concept in it which is store the image of unrecognized person who have not registered into the system through which there face is not recognized into it .For that purpose we have include that file also that shown in below figure.



PROPOSED SYSTEM

The purpose of a proposed system, have been developed and design to stay its straight and forward try to recognize the system. We have used multi system attendance which is used in the classroom for marking the attendance ,it simply marked according to the face recognized by the system as possible it can recognized by the system attendance will marked accordingly. All students must have to entering the fields like they have to enter the name and admission number all that stuff.and their photos will be recorded.the photos which were taken from the camera is stored in there respective databaseduring the start of the class the video camera will

be on and student have to sit in front of the camera and give some images with different face angles .after registering the all students in that software then the image will be compared from the database image and if the matching is found then the attendance will be recorded. In left there is an excel sheet will be generated in which the time and date is also mentioned in that and which students are present in the class and the student which are absent all were mentioned there. Generally this process will be divided into the four steps, 1. Training a data set in this photos are taken from the web cam with different face angles . 2. Then student have to just enter the roll number and name of that student and show some images of that students and it verifies that whether that student is recognized or not if they recognized then they automatically mark the attendance. And it will occurs with the help of the haarcascade algorithmhaarcascade_frontalface_defaultfile.haarfeatures it is use for the feature extraction in this open cv provides the detect multi scale.so in this it just creates a rectangular shape in the position of the face . it provides three parameter like scalefactor,min neighbour and one more is min size.is showing how much an image can be reduced . The minneighbourst shows the quality of the faces..minSizeis used to that how small thing u want to detect like if we are showing our image from very far place so this minsize factor will help us.

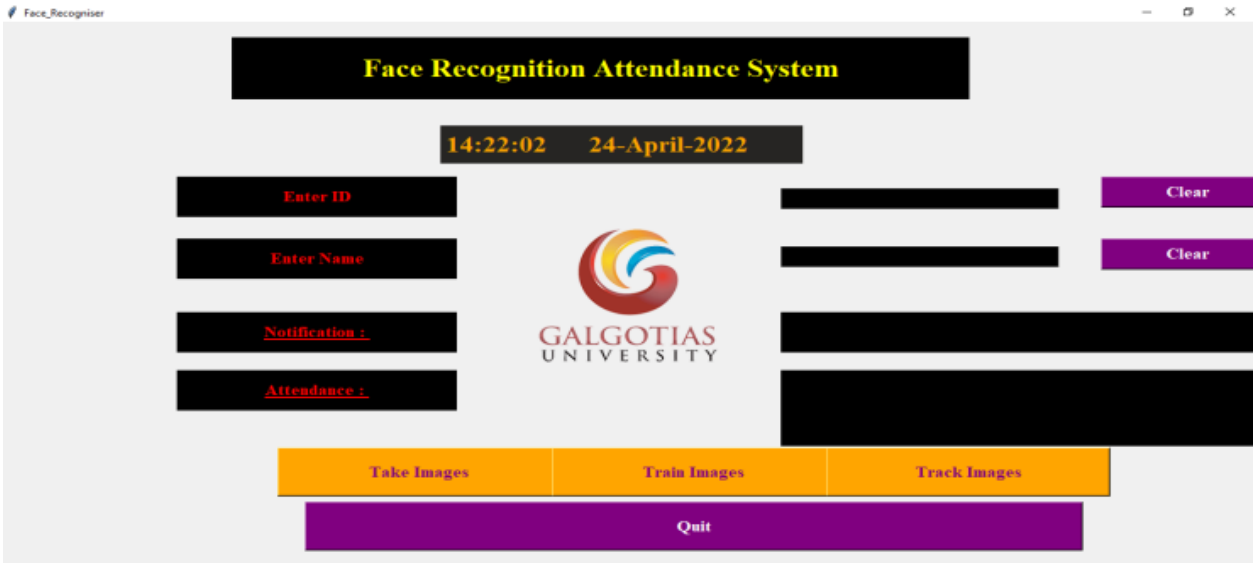


Figure shows Interface of the system, Algorithms being used:

HAAR-CASCADE

The Haar-Cascade algorithm that's work with the classifiers and lbph that's corresponding to the trainer.yml of taking the two phases i.e. first the registration purpose and the second is taking the attendance. Photos we'd like those that wish to be classified are referred to as consensual photos and pictures that we might not want our separatist to try to to split are referred to as negative images. A straight forward and effective feature descriptor. It is commonly utilised not just for face detection but also for object detection. If we're talking about the HAAR-CASCADE, it's a great tool for dealing with real-time objects or we can called it image shape which matched through the lbph through one by one quadrant of the image processing system and then it declared the result. In comparison to other algorithms, haarcascade is an object detection algorithm that is used to recognise faces in images or real-time recordings.. IT's fast as compared to other algorithm like HOG which is called Histogram of Gradients .This algorithm is given a lot of positives image if we compared to the other algorithm that we used.

Local Binary Pattern Histogram

The local binary pattern histogram was primarily used in a face recognition system, which entails comparing the image images that we obtained to the photos that were previously captured. "we will already stored in the database of the system". The programmed used the system's four key parameters to recognize each individual's face. "The local binary pattern compared to the against the central of pixels of the images then it

calculate the histogram value of lbph images then it compared to the pre processed storage images within the database of the folder ".

HOG Algorithm

If we used this paper or proposed work system by Hog algorithm for person facial detection. It is usually powerful and easily features of descriptor and it is not only used in face detection but we can also used in to recognized object as well like cars, pets and fruits etc. Hog mainly worked on the basis of "robust for object detection because the shape of object characterized using the local intensity gradients distribution and edges direction". First step is like to dividing the images into the small connected cells due to which it can compute the histogram for each cell then they bring all the values of histogram together to form unique features vector. It used the function of dlib library which has a straight simple method to get the Hog face detector. There is mainly disadvantage in this is that it's totally worked on the straight and front faces only so there is not a minimum measurement occur it will not recognized the face.

Comparison of Haar-Cascade and the Hog Algorithm

So there is some common type of features that we have seen in the most common human faces like every human faces that we have seen that is like a dark eye region compared to other region . "We've all noticed that the non-face section of most images is referred to as such." So having a simple mechanism to determine if a window is a face region is a better approach. In a real-time picture system, Haar cascade is used to detect objects. Various Haar cascade files for recognising things like "eyes, noses, and so on are available in Open cv".

HOG stands for "Histogram of Oriented Gradients", and it is a feature descriptor used in image processing and computer vision for object detection. The primary idea in HOG is to extract features into the normal vector, and the classification technique used in HOG is support vector machine, which provides whether a face or any object that we trained is actually recognized or not, and whether it is present in the region or not.. In hog there is basically we take the image directly into the folder through which we matches the image that we recognized into the system then after the matching then the system recognized the following person, there is possibility of object detection easily in the HOG algorithm

CONCLUSIONS

This program aims to build a successful classroom plan using face recognition techniques. The proposed system will be able to mark attendees with the student id. It will detect faces with a webcam and provide a list of student who present in the classroom. We have seen this event as previously but there are different level of loopholes already exits which can be created like a loophole in the process "of taking attendance" usually the old method of which caused many troubles to most of the across institution therefore, the biometric attendance features embedded within the attendance monitoring or controlling system can not only ensures attendance to be taken accurately and also the eliminated the unknown person. Upon recognition, it will mark the attendance and update the record before this technology many institutions have to face some issues like the older method takes more time in this. Then this technology introduce it will ensure not only attendance it is also covering many loopholes which will occurred in older time. The suggested system structure was created with the goal of keeping it simple and easy to understand . Steps to take achieve this is the systems final phase, which ensures that student presence is updated correctly and on time. The system may be used by anybody from anywhere, and the presence of students can be simply missed while the remaining as smart required, and also have the features the concept of unknown person images where they kept all the images of unknown person so that if any person does not marked here attendance by default then this folder may help in finding out.

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