



Attendance System Based On Face Recognition By Using Raspberry Pi

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Abstract

In this paper, we propose a robotized framework that takes the participation of the understudies for classroom addresses. Our framework takes the participation utilizing face discovery and face acknowledgment. We have built the address participation framework in view of face acknowledgment, and is connected to the arrangement of classroom address. This paper first audit the related works in the field of participation administration and face acknowledgment. The face is the character of a man. The systems to adventure this physical element have seen an extraordinary change subsequent to the approach of picture preparing methods. The participation is taken in each school, universities and library. Customary methodology of participation is teacher calls understudy name and record participation. It requires some investment to record participation. Assume length of time of class of one subject is around 50 minutes and to record participation takes 5 to 10 minutes. For every address this is wastage of time. To keep away from these misfortunes, we are about use programmed process which depends on picture handling. We are utilizing face location and face acknowledgment framework. The camera will be joined with the Raspberry pi module. The understudy database is gathered. The database incorporates the name of the understudies, their pictures and move number. Along these lines with the assistance of this framework, the reality of the situation will become obvious eventually spared. It is so helpful to record participation. We can take participation on at whatever time.

Keywords: Viola Jones algorithm; Haar like element; Image handling, Raspberry pi

1. INTRODUCTION

Everywhere throughout the world we utilize participation frameworks to record when understudy or representatives begin and stop work, and the office where the work is performed. A few associations additionally keep definite records of participation issues, for example, who phones in debilitated and who comes in late. A participation framework gives numerous advantages to associations. Sometime in the past the participation of the understudies and representatives was set apart on registers.

With regards to schools and colleges, the participation checking framework is an incredible help for folks and educators both. Folks are never clueless of the constancy of their kids in the class if the college is utilizing a participation observing framework. The registers could without much of a stretch be abused by understudies and if data was sent

to the folks, there were high risks that sends could be made to vanish before folks even saw them. With the checking framework set up, the data can without much of a stretch be printed or a delicate duplicate can be sent straightforwardly to folks in their own email accounts. In face-acknowledgment method, distinguishing proof can be done from two feet away or more with no sit tight by the client for drawn out stretch of time simply looking towards camera is required.

2. HISTORY

Naveed Khan Balcoh recommends that understudies participation in the classroom is vital undertaking and if taken physically squanders a considerable measure of time. There are numerous programmed systems accessible for this reason i.e. biometric participation. Every one of these strategies likewise squander time since understudies need to



make a line to touch their thumb on the checking gadget. This work depicts the productive calculation that naturally denote the participation without human mediation. This participation is recorded by utilizing a camera joined as a part of front of classroom that is persistently catching pictures of understudies, recognize the appearances in pictures and contrast the identified countenances and the database and imprint the participation. Face location is a vital initial phase in face acknowledgment frameworks, with the motivation behind confining and separating the face area from the foundation. It additionally has a few applications in territories, for example, content-based picture recovery, video coding, video conferencing, swarm reconnaissance, and keen human-computer interfaces. Be that as it may, it was not as of not long ago that the face discovery issue got extensive consideration among analysts. The human face is a dynamic question and has a high level of variability in its appearance, which makes face recognition a troublesome issue in PC vision. A wide assortment of systems have been proposed, running from straightforward edge-based calculations to composite abnormal state approaches using propelled design acknowledgment techniques. In this paper we utilize the viola jones calculation to improve things

3. METHODOLOGY

For this framework we are utilizing a two-stage instrument. To begin with comes to be face location then taken after by face acknowledgment. For face identification we are utilizing Viola Jones face discovery calculation while for face acknowledgment we are utilizing haar like element.

3.1 VIOLA-JONES ALGORITHM

There are three noteworthy pieces in Viola-Jones calculation; Integral Images, Ada-Boost Algorithm and Attentional course. The basic picture processes a quality at every pixel for instance (x,y) that is the aggregate of the pixel values above to one side of (x,y). This is immediately figured in one go through the picture. Viola jones calculation utilizes Haar like elements. This is only scalar item between the picture and some haar like structures. Highlight is

chosen through adaboost. Ada-Boost gives a successful learning calculation and solid limits on speculation execution. The general type of the location procedure is that of a savage choice tree, what we call a "course". A positive result from the primary classifier triggers the assessment of a second classifier which has additionally been changed in accordance with accomplish high recognition rates. A positive result from the second classifier triggers a third classifier, etc. A negative result anytime prompts the quick dismissal of the sub-window. The course preparing process includes two sorts of tradeoffs. By and large classifiers with more elements will accomplish higher identification rates and lower false positive rates. In the meantime classifiers with more components require more opportunity to register. On a basic level one can utilize taking after stages.

i) the number of classifier stages, ii) the quantity of elements in every stage, and iii) the limit of every stage, are exchanged off with a specific end goal to minimize the normal number of assessed elements. Tragically finding this ideal is a colossally troublesome issue. Practically speaking an extremely straightforward structure is utilized to deliver a viable classifier which is very proficient. Every stage in the course diminishes the false positive rate and declines the discovery rate. An objective is chosen for the base lessening in false positives and the greatest diminishing in recognition. Every stage is prepared by including highlights until the objective location and false positives rates are met these rates are controlled by testing the indicator on an approval set. Stages are included until the general focus for false positive and recognition rate is met.



3.2 FLOW CHART

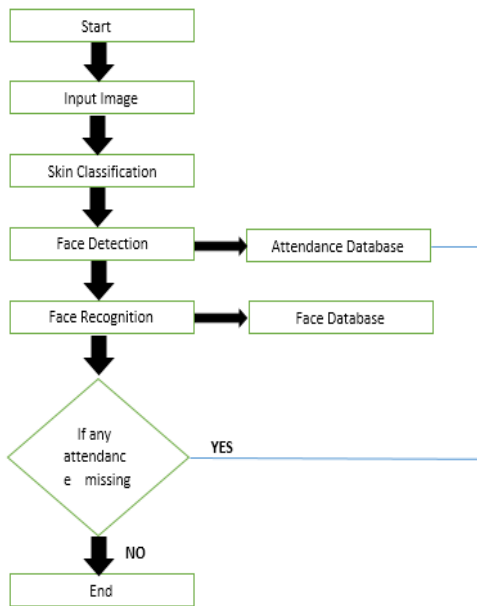


Fig: - Flow chart

3.3 SKIN CLASSIFICATION

We use the viola jones algorithm to increase the efficiency of the face detection algorithm. The image of the faces and then applied on the classroom image for detection of multiple access of image.

3.4 FACE DETECTION AND EXTRACTION

It is a PC innovation being utilized as a part of an assortment of use that distinguishes human countenances in computerized pictures. Face identification additionally alludes to the mental procedure by which people find and take care of countenances in a visual scene. It is spotlight on the identification of frontal human appearances. It is practically equivalent to picture recognition in which the picture of a man is coordinated a little bit at a time. Picture matches with the picture stores in the information base. Any facial element changes in the database will discredit the coordinating procedure. Haar classifiers have been utilized for recognition. At first face location calculation was tried on assortment of pictures with various face positions and lighting conditions and after that calculation was connected to

distinguish faces progressively video. Calculation is prepared for the pictures of countenances and after that connected on the classroom picture for location of numerous appearances in the picture. The capacity open CAM_CB() is called for beginning the camera to catch the image. Next, ExtractFace() is utilized to extricate the frontal face in a video frame. The ExtractFace() uses OpenCV haar cascade strategy to stack the face.xml(haarcascade document) as the classifier. The yield of the classifier is in parallel shape and yields "1" if face is found and "0" generally. After the face is recognized it is cut into a grayscale picture of 50x50 pixels which is finished by "Include Face" catch in the face acknowledgment module.

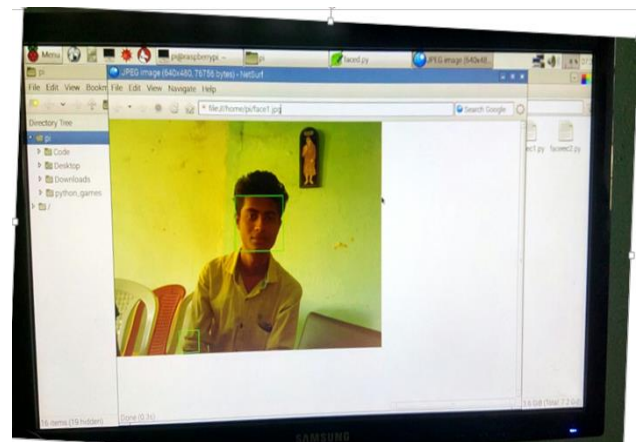


Image:- Face detection

3.5 FACE RECOGNITION AND ATTENDANCE

Face acknowledgment is recognizing or checking a man from a picture or a video outline. This is contrasting and chose facial components from the picture and a database. After the face discovery step the following is face acknowledgment. This can be accomplished by editing the initially distinguished face from the picture and contrast it and the database. This is known as the choice of locale of hobby. Along these lines countenances of understudies are confirmed one by one with the face database utilizing the Eigen Face strategy and participation is set apart on the server. In Open CV, we have a capacity called perceive() [12], which will execute the acknowledgment of the Eigen faces. It has three



stages in which two of them are as of now done that is stacking the face picture and anticipating onto the subspace. The capacity load Face Image Array(), loads the face picture into face Image Array, as recorded in xml document. Here, the quantity of face pictures is put away in a different textbox named "No. of countenances in the scene" and the quantity of appearances, is consequently checked by number of confronts recognized. The framework comprises of a camera that catches the pictures of the classroom and sends it to the picture upgrade module. After improvement the picture comes in the Face Detection and Recognition modules and afterward the participation is set apart on the database server. At the season of enlistment formats of face pictures of individual understudies are put away in the Face database. Here every one of the appearances are recognized from the information picture and the calculation contrasts them one by one and the face database. In the event that any face is perceived the participation is set apart on the server from where anybody can get to and use it for various purposes. This framework utilizes a convention for participation. A period table module is likewise connected with the framework which naturally gets the subject, class, date and time. Instructors come in the class and simply press a catch to begin the participation process and the framework consequently gets the participation without even the intensions of understudies and educator. Along these lines a great deal of time is spared and this is exceedingly securing prepare nobody can check the participation of other. Participation is kept up on the server so anybody can get to it for it purposes like organization, folks and understudies themselves. Camera takes the pictures persistently to identify and perceive every one of the understudies in the classroom. Keeping in mind the end goal to maintain a strategic distance from the false recognition we are utilizing the skin arrangement method. Utilizing this method upgrade the proficiency and exactness of the recognition process. In this procedure first the skin is grouped and after that just skin pixels remains and every other pixel in the picture are set to dark, this enormously upgrade the exactness of face identification process. Two databases are shown in the trial setup Figure.

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Face Database is the gathering of face pictures and separated components at the season of enlistment procedure and the second participation database contains the data about the educators and understudies furthermore use to stamp participation.

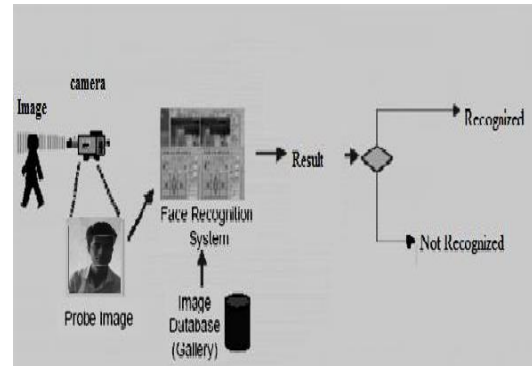


Fig.: Basic block diagram of facial reorganization

4. FUTURE SCOPE

For security reasons, we can use detection & recognition system. To identify culprits on bus stations, railway stations & other public places, we can use this system. This will be helping hand to the police. In this system, we will use GSM module. Suppose if culprit is detected, then detected signal can be transmitted using GSM module to the central control room of police station. With the help of ISDN number of GSM, culprit surviving area will be recognized

5. CONCLUSION

We come to know that there are wide range of methods such as biometric, RFID based etc. which are time consuming and non-efficient. So to overcome this above system is the better and reliable solution from every perceptive of time and security. Thus we have achieved to develop a reliable and efficient attendance system to implement an image processing algorithm to detect faces in classroom and to recognize the faces accurately to mark the attendance.

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