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REVIEW PAPER ON DEEP LEARNING TECHNIQUES FOR BIOMERIC ATTENDANCE SYSTEM BY FACE DETECTION USING EYE RATINA

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Abstract: Every human have its unique identity and it is useful in technology for different purpose. Automatic identification of an individual person based on a unique feature possessed by the individual. The entire universe every educational institution is apprehensive in relation to the attendance of specifically since this has a repercussion on their comprehensive accomplish. Generally attendance of students are conducted by signing on paper otherwise calling student roll number which is extremely time shattering. There may be chance one student can give other presents. For eliminate this problem one of the solutions is a attendance system which is biometric-based this can automatically capture students attendance by perceiving student iris.

Iris identification is evaluated as one of the most liege, faultless and well planned biometric identification system owing to the inner mannerism of iris, such as singularity, disobedience and time steady. Iris recognition is contemplate as the most assured and inch-perfect biometric identification system convenient. Daugman developed patented algorithms which uses by Most commercial iris recognition systems and this algorithms produce accurate recognition rates.

Keywords: Radius Calculation, Segmentation, Pattern recog, Iris biometrics, Authentication, nition, Active Camera, User biometrics.

I INTRODUCTION

Today we are living with digital technology which have computer slaves by this life of human became much easier there is not necessarily more secure. In the whole world one of the core problems is fake identity. In Today’s technologies more popular technology are digital biometric technologies for managing attendance most efficient biometric is Iris recognition [1]. Survive attendance system is more time monopolize as it need time to signing on the paper or call students roll number. There may be problem of having hardcopy of attendance record when attendance sheet may misplace [2].Automatic attendance management system depends on A biometric for identification that use fingerprints. For reliable identification of persons a different proposal is iris pattern which is very constructive specially when require to explore enormous databases without any incorrect matches [3].

Iris have its uniqueness and stability by using iris recognition a person can be reliably identified. There is no two irises are identical so it’s becoming so popular, of a person even irises of the left and right eye are not similar. At the ten months of age iris is fully structured so Irises are stable, other identifying features can change with age but iris leftover the same for the period of their life span [4].

There are different steps following:

- First Step: capture is the way during the enrollment of the system snap the picture.
- Second step: extraction is the specific feature from the face used for finding or extract.
- Third step: comparison, where new input is used for comparison with the database ().

Fourth step: matching, the system will try to find the matching of the new face with the registered face based on extraction and comparison process.

The sequence of the processes is

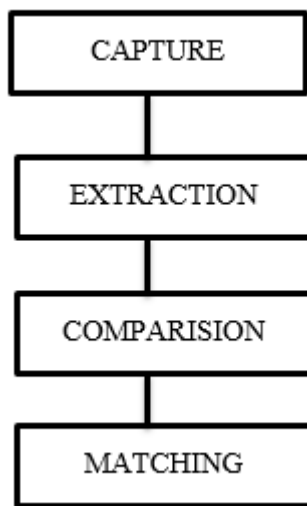


Figure 1. Flow chart of Processes

In this article a prototype design attendance system for managing attendance of students in classroom by using face-recognition will be explained. To keep away from the queue, when there are numbers of students come in the classroom concurrently, the method of concede student attendance in the classroom will get down to a few minutes in forge ahead of the class period until the end of the class period. Up to a certain point one camera is capable of capturing digital images which contain faces of students in the classroom. By using face recognition technology determine student presents or a lecturer in a classroom can be done during the learning session.

II LITERATURE SURVEY

2.1 Attendance Techniques

In 2008 Computerized Attendance System, Nucleus Research recommended the consumption of a computerized presence system, which can eliminate human data record error, human involvement, and repetitive work. This system is working to compact payroll inflation, rise productivity, compact payroll error, and reduced overtime, Subtraction of paper prices, leaving of heritage systems and which can offer all the reports on demand. In this system, faculty has to take appearance physically, only these records have to be entered into the computerized system. But in this also, the problem of data entry error could occur [5]. A desktop application settled by Jain et al. [6], in which all the list of noted students in a detailed course will be shown when the lecturer start the application. The appearance recording is done by snapping a check box next to the name of the students that are present,

and then a register key is snapped to mark their presence. But in this also, human involvement for presence locating is desired. Alternative similar project was suggested, but in this case the student will have to register distinctly using a user server socket program from their device (laptop) [7].

2.2. Bluetooth Based Attendance System:

In 2013, Vishal Bhalla et al. [9], have planned the presence system which can take presence using Bluetooth. In this scheme, presence is being occupied by mentor’s mobile phone. Application software is fixed in mentor’s mobile telephone permits it to enquiry student’s mobile telephone by Bluetooth connecting and through provision of student’s mobile telephone Media Access Control (MAC) reports to the mentor’s mobile telephone, presence of the student can be secure. The tough of this expected system is student’s phone is compulsory for presence. In case of students’ absent-minded if his mobile is set to his friend then also present is noticeable. So presence of student is not vital only phone should be in attention area.

2.3 NFC based Attendance System:

The NFC-based applications shorten numerous human day-to-day actions by just touching an thing secure or combined with NFC label. For example, Smart Touch is one of the initial NFC plans that focused on NFC technology which was corresponding by VTT Technical Research Centre Finland; requests in numerous parts were established in this project such as mobile expense and ticketing, glucose measure, etc. [8]. In [11], writer presents the application of an (AMS) Attendance Management System that is built on Bluetooth plus NFC technologies in a multiuser situation. It uses thumbprint & the Bluetooth address of the NFC permites phone of the user to validate the uniqueness of the user. A Java based desktop application obtains the NFC label IDs, extra material associated with the mobile phone and the user and submits them to an analyzer for the interpretation of the user’s performance. But in this case, student must be consuming NFC allowed phone to mark occurrence in the classroom.

2.4 Face Recognition based Attendance System:

In [8], Student presence is being occupied by one of the biometric technique. i.e. Face Recognition. As Iris and thumbprints are very short-distance biometrics then our request needs a person to be at a middle distance from the camera, which is stable at the middle of the classroom nearby the black panel, hence that the opinion of the camera covers the whole classroom. The model is established with the help of real time Open CV collection. The planned system covered of using the Viola Jones algorithm for noticing the human faces and then the noticed face is resized to the essential size, this resized face is additional treated by consuming linear stretch divergence enhancement and lastly it is accepted using

a simple PCA / LDA. Once recognition is completed, automatically presence will be updated in an Excel Sheet.

III PROPOSED METHOD

The planned face recognition system is shown in Fig. 1. The progression starts by capturing the look photo by using camera. Subsequently, the face espial process by using skin shade detection and face motion tracking was performed. This process also carried out pinpoint process of eyes, lips, and face borders positions. Additionally, the adjustment process was performed, along with the face size normalization process and deviation of lighting on the face. The next step was the face attribute, which later would be used in the matching process.

3.1 Face Detection and Tracking:

The camera taken photos will be kept in the retention buffer for the additional skin color observing process. This process predicted to notice the skin color of an photocopy taken by the camera. The obtained photo commonly had the RGB arrangement. To clarify the skin color process, the RGB format was turnto a YCrCb format to separate the intensity of Y using colors (chromaticity) communicate in two variables, Cr and Cb. In modeling the skin colors, only Cr and Cb details were used, thus the change effect in lighting strength could be minimized. The awash area of the light caught by the camera had fixed Cr and Cb value, thus the values of Cr and Cb were a reliable information for the color classification process.

Transforming the RGB format to YCrCb used in the following equation:

$$\begin{bmatrix} Y \\ Cb \\ Cr \end{bmatrix} = \begin{bmatrix} 0.29900 & 0.587000 & 0.114000 \\ -0.168736 & -0.331264 & 0.500000 \\ 0.500000 & -0.418688 & -0.081312 \end{bmatrix} \begin{bmatrix} R \\ G \\ B \end{bmatrix}$$

where Y is the luminance (color intensity), Cb is the blue constituent, and Cr is the red constituent [9]. This technique was also used to eliminate the fundus photo which regularly has diverse colors with the face skin color. The next phase is the transformation process from RGB format to Grayscale was performed. The face finding procedure was perform to recognize the face place using Haar Cascade algorithm, as define in the flow diagram in Fig.2

If the face photo had stayed observed, it would draw a box which shields the face as an ROI (Region of Interest). This ROI box would be used to crop the photo, thus only the face photo would be refined by the then procedure to save the calculation time. Fig.3 shows the outcomes of the user face discovery process, patent with a white box photo that would follow the user’s face movement, or in the other words was able to display the movement of the user’s face.

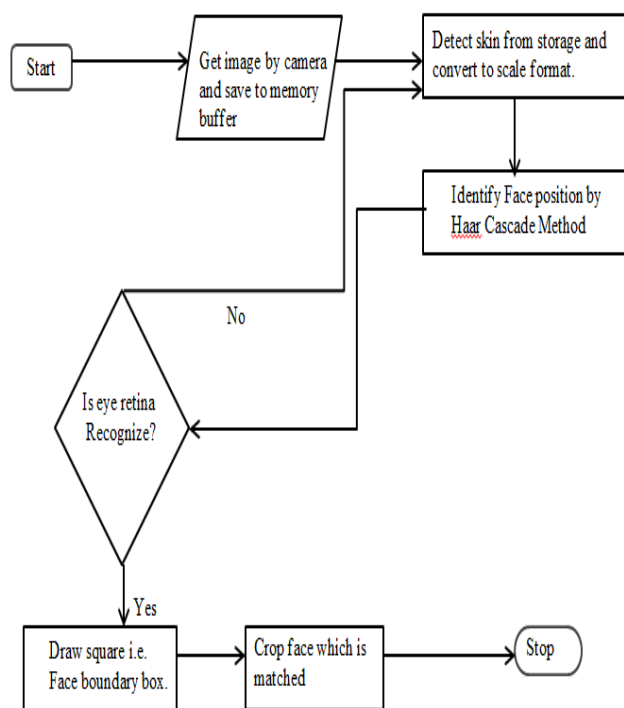


Fig. 3.1 Face Detection and Tracking Process



Figure. 3.Face detection and tracking result with ROI.

3.2 Features Extraction and Matching:

This procedure starts by bring into line the ROI face input from the previous face finding procedure as shown in small image. The correction procedure contained of normalizing and regulating the face magnitude due to the variations of the environment light. This procedure was required thus in the subsequent procedure there would be no too far outcome change because of the noticed facial size, due to the divergent distances among the face and the camera and change differences of the environmental light strength during taking the photo.

3.3 Detecting Face:

The face observing process was done by Haar Cascade algorithm. The birth of this test was to govern the performance of the face finding procedure inside front

situations or face to face with the camera. The system pointer could notice the face caught by the camera by the feature of a green box include the noticed face. The next procedure is to find the system capability to notice faces that were not straight facing the camera, or in a state where the face prepared a certain approach to the camera. The try out was done numerous times by making many face angle to the camera till the system could not find the face anymore. Conforming to the test outcomes gotten, the face slope extreme angle that could still be noticed by the camera was about 30°. Thus, if the face angle of the camera has beat 30°, the face can no longer be able to be relate by the system[14][15].

The subsequent testing was to find the system capability to detect the head place or face position slanted to the left or to the right. The trying was completed with numerous angles. According to numerous angle changes done too to the left or to the right, the system could notice the face up to 30°. If the face angle of the camera has overtaken 30°, the face can no longer be able to be saw by the system. The next part was to define the system competence to detect frequent faces with a various number of faces and dissimilar brilliance of the photo. The test was done by using an photocopy from a photo contained numerous people photos with numerous differences of illumination.

3.4. Recognizing Face;

The face appreciation procedure was approved out by using LPBH algorithm because of its smaller calculation load, so it is comparatively fast and can be used for the real-time appreciation procedure. The LPBH thought is to not look the whole photo as a high dimensional direction but to only test the local structures of the significant substances. The take out object features only have low extents, for example in face identification situation, it will only analysis the face, eye, and mouth features[16][17]. The core idea of LPBH is to make a summary of the native photo construction by distinguishing each pixel with the neighbor pixel by taking a pixel as the midpoint and developing (threshold) of the neighbor pixel's value. If the strength value of the center pixel is larger or equal to its neighbor, it will be absolute a value of 1 and if it will not be marked with a value of 0. This procedure can create the binary values for each pixel, such as 11001111. Thus with 8 pixels nearby the midpoint pixel, there would be

$$LBP(x_c, y_c) = \sum_{p=0}^{P-1} 2^p s(i_p, i_c)$$

28 possible arrangements called as Local Binary Pattern or often referred as LBP code.

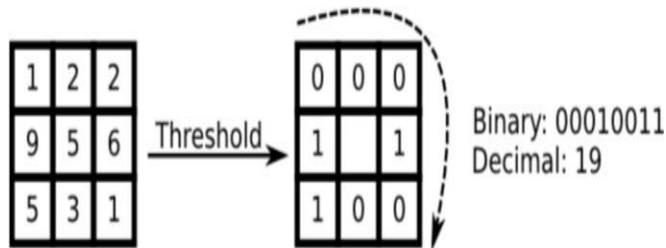


Fig. 4. Local Binary Pattern with 3x3 neighboring pixels.

In general, the LBP operator is given by the equation:

where (x, y) is the middle pixels with strength *i_c*, and *i_p* is the strength of the neighbor pixels. S is a symbol function defined as:

$$s(x) = \begin{cases} 1 & \text{if } x \geq 0 \\ 0 & \text{otherwise} \end{cases}$$

Conformation is the technique of confirming the identity of an separate. Conformation plays a most significant part which can offer the guarantee of person's whether he or she has the right to access. In this accessible system after processing and calculating radius of the photo the outcome are kept in the data bases that will be used for relating with the next person's photo for conformation. If the next photo is tone with the kept one then the system displays that the value is tone with kept value and takes this person's presence. If the value of radius is not tone with the earlier kept value on the record, the system displays that the value is tone with kept value so the process will be continued.

IV CONCLUSION

In this paper we introduced automatic attendance system. This attendance system technique will provide easy way to conduct attendance. It will helpful to put record without wasting of time in form of calling roll number. By using face recognition technology will helpful to determine student presents or a lecturer in a classroom can be done during the learning session

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