**Automated Smart Attendance System Using Face Recognition**

**Alternative Title:**

 A real timeattendance system usingface recognition an automated surveillance camera.

**Aim:**

To detect and recognize the face using real time attendance system based on LBPH algorithm.

**Abstract:**

 Face recognition can be considered one of the most successful biometric identification methods among several types of biometric identification including fingerprints, DNA, palm print, hand geometry, iris recognition and retina. Face recognition provides biometric identification that utilizes the uniqueness of faces for security purposes. The problem with face recognition using biometric identification is its lengthy process and the accuracy of the results. This paper proposes solutions for a faster face recognition process with accurate results. The proposed face recognition process was done using a Machine Learning. This improved face recognition approach was able to recognize multiple faces with high accuracy level.

**Synopsis:**

Image processing is a technique for performing operations on an image in order to enhance it or obtain useful information. It's a form of signal processing in which the input is an image and the output is either an image or the image's characteristics or features. Image processing is one of the fastest-growing technologies. To detect and recognize the face using real time attendance system

**Existing System:**

 The Existing System is single face recognition system and a new face detection approach using color base segmentation and morphological operations is presented. The algorithm uses color plane extraction, background subtraction, thresholding, morphological operations (such as erosion and dilation), filtering (to avoid false detection). Then particle analysis is done to detect only the face area in the image and not the other parts of the body. This method given result is poor performance and accuracy. So we will move the proposed system.

**Problem Definition:**

LBP (Local Binary Pattern) operator is applied on a block of 3\*3 pixels. There are in total nine pixels where the middle pixel is called as center pixel. The LBP algorithm works by taking eight neighbor pixels which are compared to one central (middle) pixel and in this recognition process LBPH
finally generates a binary number

**Proposed System:**

 The proposed system consists of 4 steps, including training of real time images, multiple face detection, comparison of trained real time images with images from the surveillance camera, result based on the comparison. In our proposed system, the video obtained from the camera will be converted into frames. When a face is detected in a frame, it is preprocessed where noise and redundancies are reduced. The processed real time image is compared with the processed images already stored in the database. If he/ she identified with the help of camera, we get a notification from android through firebase.

**Advantage:**

The developed GUI take image performs capturing of different instances of image up to 200 in this model from video and it takes the user input as id (integer) and name(string).

**Modules:**

* Dataset Collection
* Algorithm
* Detection

**Dataset Collection:**

In our proposed system, we collect a real time data using open-CV. we collect a data manually and store as a dataset. That collected data will be trained for getting high accuracy result or identification.

**Algorithm:**

 After getting trained dataset, that data will be given to the machine learning algorithm. Machine learning algorithm analyzes the data. Here the data will be analyzing frame by frame to identify the persons. It compares the real-time footage to trained dataset.

**Detection:**

In the detection process, the live footage will be getting from the open-CV. Then the analyze start from the first frame. It continuously starts comparing the current video frame to trained data set. If the register student is found, it shows the name, id and marked label on the screen. After that, the detected value passes to android user via firebase.

**Hardware Requirements:**

* Hard Disk : 500GB and Above
* RAM : 4GB and Above
* Processor : I3 and Above
* Webcam - 1

**Software Requirements:**

* Operating System : Windows 10 (64 bit)
* Software : Python
* Tools : Anaconda

**CONCLUSION AND FUTURE WORK:**

 From this model we can recognize the faces of students and can mark their attendance automatically in real time without human intrusion. Therefore, in a regulated environment, the proposed method enables identification and recognition of faces. LBPH (Local Binary Pattern Histogram)
for facial recognition and detection in a particular area within the surveillance camera. They also have reliable outcomes for pose variance, and illumination after obtaining good results from different experimental studies of this technique.This method completely takes less time to process whole image. The Future Scope of this project can be extended to update attendance for multiple people.

**Architecture Diagram:**

Student

Registration

Camera

Dataset Creation

Machine Learning

Model Creation

Real time

User input

Present

Absent

Firebase

Android Notification