Published by :
http://www.ijert.org

International Journal of Engineering Research & Technology (IJERT)
ISSN: 2278-0181
Vol. 8 Issue 03, March-2019

Implementation of Face Recognition based Attendance System using LBPH

Ajimi. S
Electronics and Communication Engineering
Lourdes Matha College of Science and Technology
Thiruvananthapuram, India

***Abstract*— The real challenge is to implement an accurate attendance system in real-time. There is a lot of difficulties to mark attendance in a classroom have large number of students. Like these situations there will a lot confusions rise from teachers to handle attendance for all students. Using this paper, attendance marking will be easy through recognize the face of student with the help of recognition algorithm and mark the attendance. Cascade classifier is using to detect face. Also Local Binary Pattern Histogram algorithms for this technology using face recognition. This system saves time and also monitor students and students can verify their attendance status with the help of a user id and password.**

Keywords*— *Face Detection, Face Recognition,Haar cascade classifier, LBPH algoritham

I. INTRODUCTION

For checking the performance of students in all institutes, among this system, maintenance of an attendance system is very important. In most of the institution, traditional attendance marking system is used by teachers through attendance sheets. Students will sign the attendance and file it or login into computer for future analysis. This technique is called tedious. This consumes time and inaccurate as some of the students often sign for their friends. In a large classroom, there is difficult to track attendance of each student. Monitoring of a student attendance in classrooms is tedious.

The attendance marking system with face recognition, image processing using stream and keeping the attendance in database which records by the teachers. Creates the database of the students/staffs/teachers. There is no efforts for the user side. This system makes effective with intrusive nature is absent this system.

II. LITRATURE SURVEY

Smart Attendance Monitoring System: A Face Recognition based Attendance System for Classroom Environment [1] proposed an attendance system that solves the manual method of existing system. It is face recognition method to make the attendance. The system even facial expression lighting and pose of the person for making attendance.

Attendance System Using Face Recognition and Class Monitoring System [2] the author of Attendance System Using Face Recognition and Class Monitoring System shows as facial of different person/student from recognition attendances will be uploading to database. According to this, automatically attendance system based on face recognized and also decreases manual work.

Automatic Attendance System Using Face Recognition [3] for lecturers or staffs, implemented the attendance system. In this system, they use the algorithm of Viola-Jones and PCA for the face recognition. This system captures two images using a digital camera; one is from the start time of the class and other one id in the end time of the class. Both images will process by this system and will make important role to recognize student using facial recognition. If the student recognized both in the start time and end time classes attendance will be marked for that student.

Class Room Attendance System Using Facial Recognition System [4] a new approach a3D facial model introduced to identify a student's face recognition within a classroom, which can be used for the attendance system. Using these analytical researches will help to provide student's recognition in automated attendance system. It recognize face from image or video stream for record their attendance to evaluate their performance.

RFID based attendance system [5] to record attendance, need to place RFID and ID card on the card reader based on the RFID based attendance system. To save the recorded attendance from the database and connect the system to the computer, RS232 is used. The problem of fraudulent access will be rise from this system. A person like any hacker will authorize using ID card and enters into the organization.

A design and implementation of a wireless iris recognition attendance management system [6] A bio-metric technique Iris for iris recognition that can be used in this system. Iris Recognition is a design and implementation for wireless system. The base of Iris recognition system is Daugman's algorithm. Capture of image of iris recognition, extraction of the image, storing of the features of the image and matching between the image features with the image which stores within the database are using in this iris recognition system. But unfortunately, topography of iris recognition is bad.

III. METHODOLOGY

A. Description of block diagram

The system proposed in the basis of face recognition. When a student come across the camera module, then his/her image/photo will be captured and recognize with validation. When recognition and validation is succeeded, then his/her attendance will mark automatically. In this system, user gets a login interface to interact with the system. If login is

International Journal of Engineering Research & Technology (IJERT)
ISSN: 2278-0181
Vol. 8 Issue 03, March-2019

succeeded in the system, interface displays the home page of the proposed system.

The proposed block diagram of the automatic attendance system is shown in the Fig. 1.The system block diagram and explained as follows.

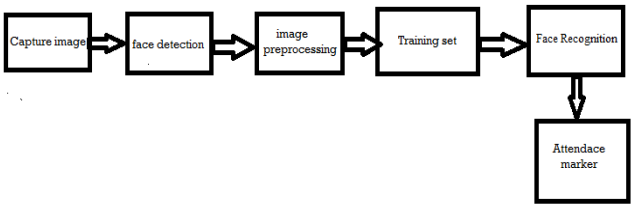

Fig. 1. Proposed block diagram

1. Capturing the Image

The camera will place at the entrance of the classroom to get student's face images perfectly. Then it goes to further process of face detection.

2.Face Detection

In this part, implements face detection, which helps to determines captured image with location and sizes of student faces. The image will be captured from detected faces using haar cascade classifier.

3. Image Preprocessing

There is a preprocessing requirement for enhance the input image for improve the quality of image .We converts input image to grey scale image using color to grey image conversion technique.

4.Training Set

Comparing the faces which to be recognized with some other similar faces to did recognition process. Supply algorithm faces in training set for tell which person who belongs. When recognize face by algorithm, it uses the training set to make recognition.

4. Face Recognition

The important part of this system is face recognition. Face recognition of an automatic method of identifying and verifying a person from images and videos from camera.

5. Attendance marker

The particular student will be marked as present in attendance when if a face from the particular date folder is matched. That is, collect the list of all students who were present in the class, and rest of the students belongs the class will be marked as absent. This is the following procedure.

B. Face Detection using Haar cascade classifier

Paul Viola and Michael Jones are proposed the effective object detection method Haar cascade classifier. This is used machine learning based approach. From this, a cascade method analyzes from the positive and negative images. The it will use in other images to detect objects. In here, without faces to analyze the classifier, face detection algorithm will use in that need a lot of positive and negative face images. There is a different type of haar feature, which analyze the feature existing on the image. From the image of 24X24 window in each operation, subtracts the sum of white region pixels with the sum of black region pixels, which an integer value will output. This determines the validation of the corresponding feature.

C. Face recoginizer using local binary pattern histogram

For the input image given, this algorithm generates a new histogram and compares it with other generated histograms. The comparison finds the best match histogram and returns the label of histogram, which associated.

For the histogram faces recognize, a 3X3 window move it one image, at each move of each local part of an image, the center pixel will compared with its neighbour pixels. 1 is denoted the neighbours pixels intensity value is less than or equal to center pixel and 0 is denoted for others. Then, under 3X3 window, read values 0 or 1 in clockwise order and will have a binary pattern like for the 11000011 this pattern are local to some area of the image. We will have a list of local binary patterns after performing the recognized on whole image.

D. System Flow Diagram

Algorithm:

Step 1: Input image is capture
Step 2: Convert color image to grey scale
Step 3: Face detection using haar cascade classifier
Step 4: Face recognition using local binary pattern histogram
Step 5: Face matching with trained ones
Step 6: If the student will be check
Step 7: If it matches attendance marked on “PRESENT” the data sheet
Step 8: Then not matched attendance marked on “ABSENT” the datasheet
Step 9: Generate report
Step 10: Update attendance
Step11: Continue the step 6
Step 12: Stop

These systems save the time and effects of the attendance system. It is good accuracy. The proposed system is the update the attendance marking on the students. The system used for the school, colleges and library.

The system flow diagram of the automatic attendance system shown in the Fig. 2.

International Journal of Engineering Research & Technology (IJERT)
ISSN: 2278-0181
Vol. 8 Issue 03, March-2019

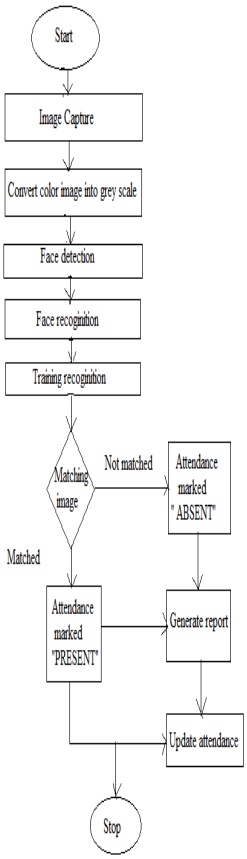

Fig. 2. System flow diagram

IV. CONCLUSION AND FUTURE WORK

We have a implemented a attendance management system for lectures and students attendance. It helps to reduce time and effort, especially in the case of large number of students and lectures to be marked attendance. The whole system is implemented in Python programming language. Facial recognition techniques uses in the system for the purpose of the student attendance. And also this record of student can used in exam related issues.

On this project, there is some further works to do for alert the student by sending SMS regarding his, her attendance. GSM module is used for this purpose. Parent of the student gets this SMS alert.

REFERENCES

[1] Shubhobrata Bhattacharya, Gowtham Sandeep Nainala, Prosenjit Das and Aurobinda Routray, "Smart Attendance Monitoring System : A Face Recognition based Attendance System for Classroom Environment", 2018 IEEE 18th International Conference on Advanced Learning Technologies, pages 358-360,2018.

[2] Arun Katara, Mr. Sudesh, V.Kolhe," Attendance System using Face Recognition and Class Monitoring System", IJRITCC, Volume: 5,Issues: 2 ,February 2017.

[3] Ashish Choudhary, Abhishek Tripathi, Abhishek Bajaj, Mudit Rathi, and B.M Nandini, "Auttomatic Attendance System Using Face Recognition", International Journal of Modern Trends in Engineering and Research , Volume: 03, Issue: 04, ISSN (Online):2349–9745; ISSN (Print):2393-8161,April 2016.

[4] Abhishek Jha, "Class room attendance system using facial recognition system", The International Journal of Mathematics, Science, Technology and Management (ISSN : 2319-8125) Volume: 2,Issue: 3,2014.

[5] T. Lim, S. Sim, and M. Mansor , "RFID based attendance system", Industrial Electronics Applications, 2009. ISIEA 2009. IEEE Symposium on, volume: 2, pages 778-782, IEEE 2009.

[6] S. Kadry and K. Smaili, "A design and implementation of a wireless iris recognition attendance management system", Information Technology and control, volume: 36, no: 3, pages 323–329, 2007.